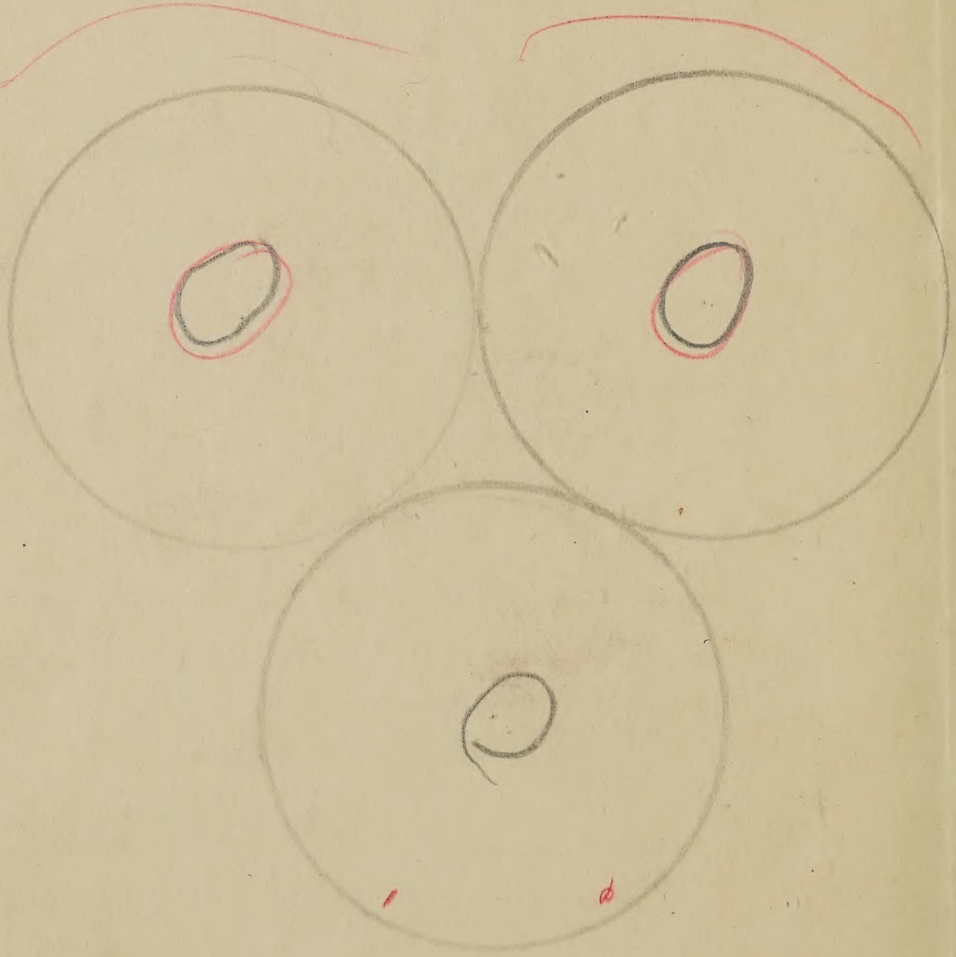




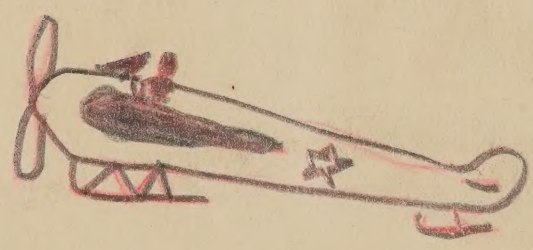
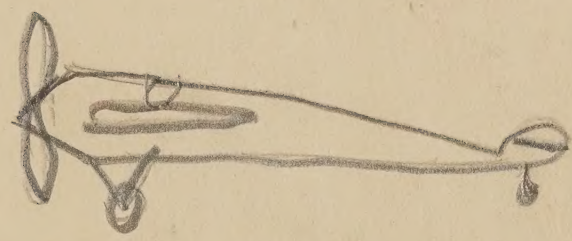
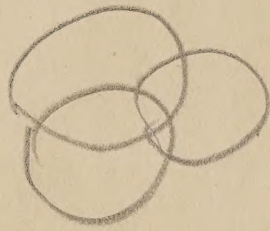
HUMAN GEOGRAPHY


J. RUSSELL SMITH

BOOK ONE
PEOPLES AND COUNTRIES



Sold to Arthur Smith





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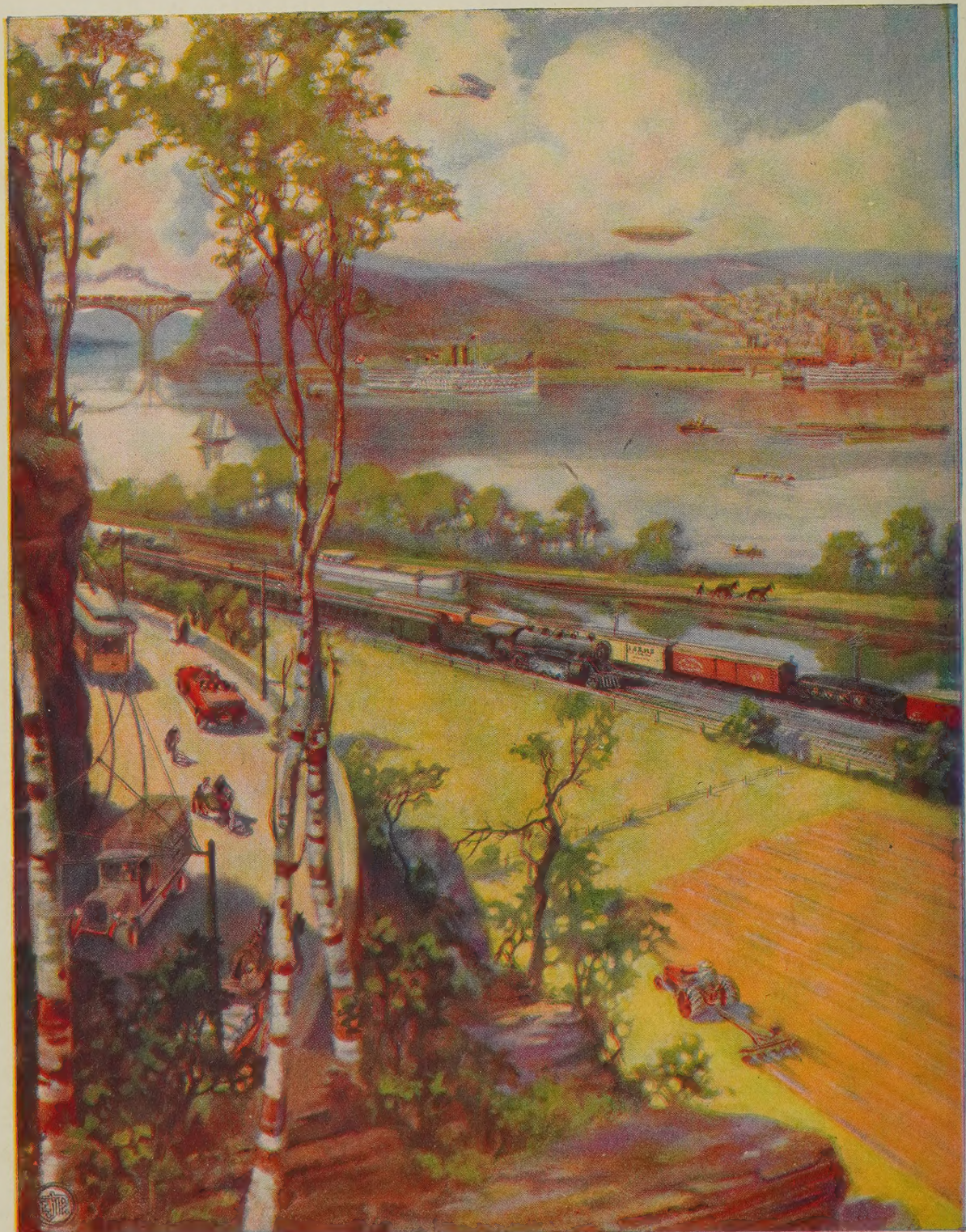


Fig. 1. This picture shows many ways of transporting passengers and goods. How many of these have you seen? Can you tell how many were in use fifty years ago? One hundred years ago? Do the people in other lands have different ways? Can you mention some that are not shown?

HUMAN GEOGRAPHY

BY

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Home Folks, a Geography for Beginners; Industrial and Commercial Geography; Commerce and Industry

BOOK ONE PEOPLES AND COUNTRIES



THE JOHN C. WINSTON COMPANY
CHICAGO PHILADELPHIA TORONTO
ATLANTA SAN FRANCISCO DALLAS



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There is no pretense that this book is solely the product of a single mind. I have availed myself of much help from experts and from persons still actively engaged in teaching children of the age of those who will use this book.

1. For counsel as to the plan of the book:

Most of the persons mentioned in groups 2 and 3, and

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J. RUSSELL SMITH.

COLUMBIA UNIVERSITY,
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April 2, 1921.

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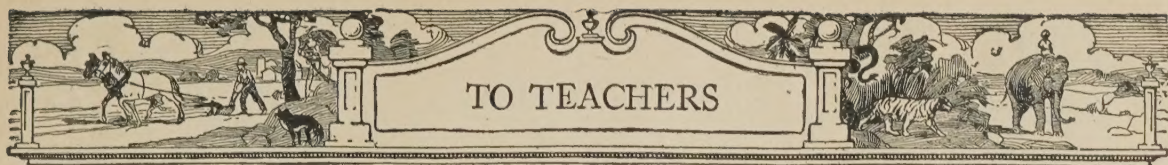
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There is a skeleton in my mental closet. I still remember that first class to which I tried to teach geography.

"Mr. Smith," said the principal of a grammar school one day in the autumn of my first year of teaching, "can you teach a class in geography?" "I suppose I could," was my reply, thinking that I would have a week or two in which to get ready. "All right," he said, handing me a book, "the class is waiting in the next room and there is no teacher with it."

I still blush to remember what I did to those boys and girls. I taught them the book—mere memory work, a deadly, stupefying exercise in memory. I did not once mention cause and effect. I simply crammed facts, unrelated facts into their little minds until I've no doubt they hated me and geography too.

This book is my belated apology to that class. That others may do better teaching than I did, I have written this text with nine principles always in mind. It is believed that they will make teaching easy.

1. *Let reason help memory.* To do this tell fewer things, thus leaving space for explanation. Thus do I answer the demand for a book that tells fewer things, but tells them in a way that aids memory. Statement and explanation go hand in hand here. If the textbook answers the child's "why," geography is easy to remember. Geography need not and should not be merely an exercise in memory.

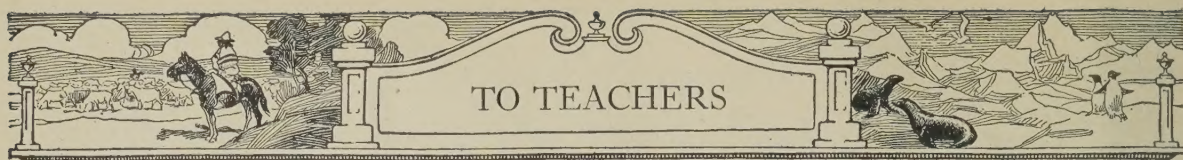
2. *Teach abstract things concretely.* In this book many abstract ideas are taught by means of narratives, and are presented

in connection with places, countries, or peoples. That is the way children naturally get ideas. See Indians, for trade, Section 6; rabbits, for thrift, Section 321; desert's edge, for how scanty rain makes nomads, Section 415; New Guinea cannibals, for the possibility of improvement in peoples, Section 513.

3. *Teach civics by description.* The concrete method of telling things permits many principles of civics and good government to be learned while the pupil is studying foreign countries, in which different types of government are described. See Canada, Section 241; Denmark, Section 343; Russia, Section 402; Turkey, Section 380; Australia, Section 507.

4. *Teach physical geography by telling about countries and industries.* We are all interested in geologic processes, but often all our interest is in the results of the process on man's affairs. Therefore, the point of approach is through people, not rocks. For this reason the physical geography is scattered through the book, as it must be in a *Human Geography*. The physical geography that counts is here. Each process is explained at some place where it is a real factor in some country or some industry or some of man's activities. This is much better than treating it as an abstract separate piece of physics. See divide, Section 9; soil, Section 69; salt lakes, Section 125; delta, Section 161.

5. *Teach by comparison.* Facts and figures about distant countries and places mean little or nothing until the child can put them into terms of the known. Using this principle I have made many, many



comparisons between our own and foreign countries. See comparisons between North and South America, Sections 283-288; wheat, Sections 81, 82; sheep in all continents, Section 114; Argentina and Kansas, Section 295; Chile and California, Section 304.

6. *Teach about people as well as about countries.* By showing the people at work making a living in the country in which they live, the facts about the country itself are best and most agreeably learned and most naturally remembered. See Indian trappers, Section 10; cod fishermen, Section 12; wheat growers, Section 75; sheep herder, Section 110; the coconut grower, Section 244; the sisal growers, Section 262.

7. *Explain the oneness of the world* by showing how trade has made all peoples help us and help each other. See Indians, Section 8; California, fruit, Section 134; The South, cotton, Section 159; trade of Canada, Section 239; Brazil, coffee, Section 280; Chico, the nitrate boy, Section 297.

8. *Teach respect for other peoples rather than race prejudice* by showing that each nation has many different activities which it performs very efficiently. See Canadian dairying, Section 239; Philippine hemp growing, Section 245; plantation rubber of Ceylon and the Straits Settlements, Section 274.

9. *Teach Home Geography by showing the relation of our life to all the world.* Some teachers will miss the formal presentation of Home Geography but when they have used this book they will find that the home geography is here.

AIDS TO TEACHERS

A manual has been prepared giving problems, methods, and teaching suggestions that will aid and enrich the teaching of this book. Any teacher using this book may secure the manual free of cost by writing to The John C. Winston Company, 1006 Arch Street, Philadelphia, Pennsylvania.

The first three chapters are human interest narratives which can be understood by young children. Teachers desiring to give more time to such studies before beginning the study of regions are referred to the following sections: sheep herder, Section 110; the prospector, Section 117; Mother Salmon, Section 137; Scott McDonald and his traps and maple trees, Section 233; Cousin Alfred and the dairy farm, Section 237; Emilio, the coconut grower, Section 244; Enrique and sisal growing, Section 262; the rubber gatherers, Section 270; Chico and the nitrate beds, Section 297.

The questions have been chosen and arranged with two definite ends in view, not only (1) to help the pupils learn essential facts, but also (2) to build up ability in handling geographic material. All the types of questions that have been found most valuable are included. The number is large to provide choice by the teacher. The problem questions have been carefully graded. In addition, the questions have been grouped usually into three paragraphs to meet the varying abilities of pupils—the whole class may complete the work outlined in the first group, most of the class that in the second, and the most advanced that in the third.



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Photo. Dr. D. B. Macmillan, Am. Mus. Nat. His., N. Y.

Fig. 2. Dog teams and sledges—the way people travel in Eskimo Land.

MEN AND TRADE

THE ESKIMO

1. People who do not have trade with other peoples.—Suppose that your family tried to make by hand everything that you have in your home or that you eat or wear or play with or use in the garden. They would be very busy and every family would have to know more occupations or trades than can be found in some small towns nowadays. If your family had to make everything by hand, you could not have many of the things that you now have; indeed, some of the things could not be made by hand at all.

For a long time, a very long time, families all over the world had to make by hand everything they had. It was a hard life. There are even now some places where people do not use machines and where each family makes everything it has.

The Eskimos live in that way. Their country is far away to the north. It is a very poor, cold country,

where few things will grow; so there are not many Eskimos. The winter is very long and cold; and the summer is so short that no trees grow, and the people cannot have gardens. The northern Eskimo has no animals which give him milk. He has never heard of potatoes or bread, to say nothing of cake. If you talked to him about one of our stores, he would not know what you meant.

2. Eskimo Land.—A white man named Stefansson lived for several years with the



Photo. Dr. D. B. Macmillan, Am. Mus. Nat. His., N. Y.

Fig. 3. Shoo-e-ging-wa and her pet, a huskie pup.

Eskimos. He tells many interesting things about them and the way in which they live. He saw people who had never seen a white man before, nor any of the things which white men make. One of Stefansson's Eskimo friends is a man named Alunak. Koak is his wife and Okuk is his boy; his little girl's name is Shoo-e-ging-wa. The Eskimo's hair is coarse and black. His skin is yellow



Photo. Dr. D. B. Macmillan, Am. Mus. Nat. Hist., N. Y.

Fig. 4. An iceberg drifting from Greenland. You can see Eskimos in the great hole in the berg. Explorer Macmillan has a kayak in his motor boat.

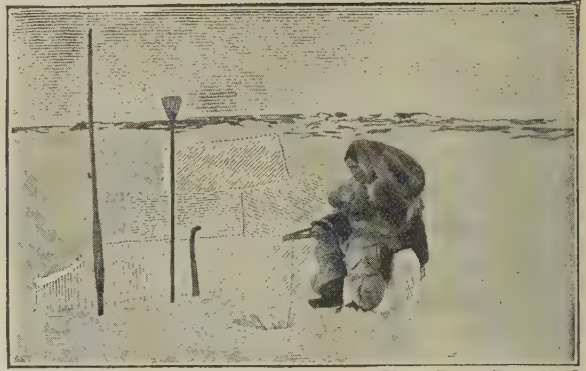


Photo. Brown Bros., N. Y.

Fig. 5. An Eskimo woman fishing. There are many fish in the water under the ice. Why did she build the fence of snow cakes?

like the Chinese. He is not quite so tall as the white man of the United States.

For a winter house, the Eskimo builds a little hut of snow. Many boys and girls in the cooler parts of the United States and Canada have built little snow houses for sport, but Alunak builds such a house to live in, for he finds it the warmest house he can get. He cannot see through the window, for it is made of a piece of fish skin that looks like dirty glass. To keep out the cold, he builds, on the outside, a long tunnel which leads up to a low door. The tunnel and the door are both so small that the people have to crawl on their hands and knees to go in or out. At the outer end of the tunnel, a chunk of snow serves as a door. A curtain of fur makes the inner door. Along the inside wall of the house is a bank of snow, covered with skins. This is both chair and bed.

The Eskimos do not have much fire, and what they do have is used chiefly for cooking. They have nothing to burn but the melted fat of animals, such as the

seal and whale. They use this fat in an oil lamp made of stone and shaped like a dish, with moss for the wick.

One day in the spring, when the ice was beginning to melt a little, but when the snow still covered the ground, Shoo-e-ging-wa, the Eskimo girl, was out riding with her sled and her dog Puk. Seeing something big and black in the distance, she went to find out what it was. How surprised she was to find a dead whale that had floated ashore during the night! She went home as fast as Puk could pull her, to tell the great news. Her father and mother felt as rich as we should feel if a carload of coal or firewood should be dumped down in our yard. Soon the family were all busy tearing off strips of the fat, called blubber. It lies under the whale's skin and keeps him warm. Other

Eskimos came, a two-days' journey with their dog sleds, to share the good luck. (Fig. 2.)

It is hard for us to see how people could get along with as few things as these people have. They must



Photo. Dr. D. B. Macmillan, Am. Mus. Nat. Hist., N. Y.

Fig. 6. Eskimos in kayaks at Etah, Greenland.

make everything they use, and that without wood or nails or iron or even a piece of wire. See what good bows and arrows they make out of bone, sinews, and feathers, all of which they get from animals. (Fig. 8.)



Photo. Dr. D. B. Macmillan, Am. Mus. Nat. Hist., N. Y.

Fig. 7. A huskie and his harness. Without the huskies, Peary could not have discovered the North Pole.

Alunak and his family live along the seashore. There they can catch fish, seals, and walrus. The seal is the greatest wealth they have. The seal eats fish. He keeps warm in the ice-cold water because he has a coat of soft, fine, waterproof fur and a thick layer of fat under his skin. The seal is both bread and meat, clothes and coal to the Eskimo family. For months at a time they eat nothing but seal meat. They cook with seal fat, and make clothes, boots, boats, buckets, and tents of the sealskin.

An Eskimo boat, or *kayak*, as it is called, is made of sealskins sewed together so as to make a water-tight sheet and stretched over a framework of whale rib bones and long walrus tusks, tied together with strips of hide. (Fig. 6.) In these tiny boats Eskimos paddle around on the sea. Okuk is very proud when, like his father, he can manage a boat of his own in the sea, and spear a seal. For boating, coats of skin

are worn. These are tied around the opening where the man sits in the boat, so that no water can get into the boat. If a boat upsets, it turns clear over and comes up again. If the paddles are not lost, the Eskimos are safe.

In winter Eskimos all wear two suits of fur, one with the fur inside and the other with the fur outside. In summer the one with the fur outside is warm enough. The clothes of the men and women are very much alike. The baby's suit is sometimes made of bird skins.

When spring comes and the snow house begins to melt, the family moves into a sealskin tent or into a hut built of stones chinked with dirt. Toward the end of summer some berries ripen on low-growing bushes, and many bright flowers bloom in the green grass of the northland. Then our Eskimos make a trip inland. There they eat berries, rabbit meat, birds, birds' eggs, and wild reindeer. Wild ducks and many other birds live in Eskimo land in summer, but when cold weather comes again they fly away to warm countries. The Eskimos then go back to the seashore to lay in their winter supply of seal meat.

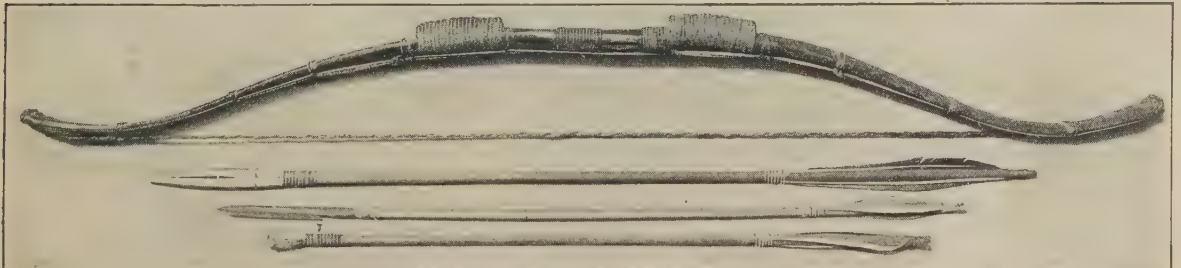


Fig. 8. Eskimo bow and arrows.

Photo. Univ. of Pa. Museum



Photo. Am. Mus. Nat. Hist., N. Y.

Fig. 9. Rabbits of the Northland. Which ones have on their summer coats?

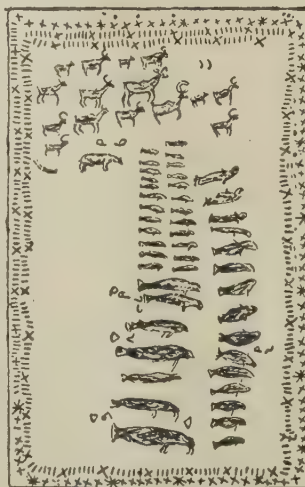
3. **The animals.**—The wild animals that live in this cold northland all the time do not seem to suffer from the weather. They have warm fur to protect them from the winter's cold. Sometimes their color protects them from their enemies. (Fig. 9.) The rabbit changes his color to keep from being caught. In the winter he is snow-white, so that the fox cannot see him on the snow, and in summer-time he is brown, so that the fox cannot see him on the ground. The fox also is aided by a white coat in wintertime, so that the rabbit cannot see him coming!

Alunak and his family have one helper, the dog that pulls their sleds. We call him "huskie." He has a thick, warm coat, so that he can curl up in the dry snow, put his four feet and his nose into a little bunch, lay his bushy tail over them, and sleep through

a blinding snowstorm that would freeze a white man to death. Sometimes the snow covers him entirely as he sleeps, and he has to dig himself out when he awakes.

When Admiral Peary, an American, went over the ice to the North Pole in 1909, Eskimo dogs pulled the sleds that carried his food and tents, and Eskimo men helped him. He found them to be honest, brave, happy men, trusty helpers, and good friends.

4. **Eskimos and their games.**—Eskimos are very fond of games. They wrestle, run races, and play football and several kinds of hockey or shinny, using long bones for shinny sticks. Sometimes they skate on new smooth ice, using bone skates tied fast to their soft shoes. As the children do not go to school, and have no books, the days must seem long in bad weather, for they have



Courtesy of Revillon Frères.

Fig. 10. Kroonnok's Diary. This is the diary of an Eskimo hunter. Around the edge is his accounting of time—the straight strokes stand for the week days, with a cross for Sundays. The pictures are the record of his year's hunting, and include deer of various sorts, a polar bear, walrus, large and small seal, and fish.

nothing to do but sit around the little fire in the small, dark, smoky, snow house. For this reason they have many indoor games. But because the houses are too small to allow them to play tag or running games, theirs are for the most part sitting-down games. There are as many as fifty kinds of games something like our cat's cradle, played with a leather string. To pass the time

away, the men sometimes make carvings from bits of stone and ivory. They carve bears, seals, sleds, and other things, and their work is much praised by white men. (Fig. 12.)

5. Six things we need.—Every family in the world needs a certain amount of food, clothes, fuel, shelter, tools, and playthings. In different countries there are different ways of getting these things, depending on the weather, on the things that will grow, and on other things that man finds in the



Photo. Dr. D. B. Macmillan, Am. Mus. Nat. Hist., N. Y.
Fig. 11. Drawings made by an Eskimo, showing the animals he had seen. See if you can find his raven, polar bear, foxes, musk oxen, rabbit, reindeer, and ptarmigan.

ground, in the woods, or in the sea.

Each Eskimo family must make or get all these things for itself. Theirs is the simplest kind of living to be found anywhere in the world. They do not need money, because they do not buy or sell. If two Eskimos should meet and want to exchange a dog for a sled, they would just "swap," as two schoolboys trade marbles.

The Eskimos would be much more comfortable if they could trade some of their sealskins for lumber to build houses, and for flour and dried fruit to eat with their meat, meat, meat. We cannot trade with them much, because they are too far away for us to build railroads to their land, and because the sea is so full of ice that ships cannot get through it. Perhaps the airplane will let us see more of the Eskimo.

This book will tell you how other people in other countries get the things they need for their living.



Photo. Univ. of Pa. Museum
Fig. 12. Eskimo carvings of a seal and a bear. They are made of walrus-tooth ivory.



Photo. Brown Bros., N. Y.

Fig. 13. Indians by their tent. Hiawatha bringing in the deer which he has killed with his bow and arrow.

QUESTIONS

1. What can an Eskimo boy or girl do that you cannot do? 2. If you visited the Eskimos, what foods would you miss? 3. Has the Eskimo language a word for piano, or newspaper, or necktie? 4. Name something you have eaten today that does not grow near your home.

5. Name five articles of clothing or five playthings that you could buy ready to use which an Eskimo does not have. 6. What changes does summer bring in an Eskimo's food, clothing, home, and work? 7. Why do we have more animals than the Eskimo has?

8. Pretend that you are Shoo-e-ging-wa, and write a story about the whale that she found. 9. Spell and use in sentences: seal, walrus, blubber.

THE INDIANS OF THE GREAT NORTH WOODS

6. The early Indians.—When white men first came to America, they thought it was a country called India, of which they had often heard. Therefore they called the people whom they found here Indians. They also called them red men, because their skins were about the color of an old copper cent. These red men did not have many tools, and they lacked many other things which make it easy to work and to live. As they had no horses, cows, pigs, sheep, or chickens, they had to catch wild animals for food. They had no guns or

rifles; so they made spears and bows and arrows with which to kill their game. They had no iron; so their arrow points and spear-heads were of sharpened stone, as was also a heavy tool called a tomahawk, shaped something like our hatchet. It was a very dull, poor hatchet, however. As they had no cloth for clothing, they used instead the skins of wild animals which they caught in traps or shot with their bows and arrows. Instead of houses, they

had tents or wigwams made of skins. When the white man came, his things seemed wonderful to the Indians, and they were very happy to trade furs and game for blankets, guns, powder, and bullets. The Indians like bright, pretty things, so they were very fond of trading for beads to make necklaces and ornaments for their leather suits.

7. The Indians of today.—As time passed the white men took most of the Indians' country, but there is still a large part of North America where there are more Indians than white men. This land is far to the north in Canada and Alaska, in a wide strip between the towns and farms of the white men and the cold snowy land of the Eskimos. You have heard men who were soldiers in the World War talk about England, France, and Germany; but the country where the Indians still have their hunting grounds is larger than those three countries put together. The land is covered with evergreen forests. The winter is long and the summer is short. It is a great, cold, silent land of deep snow and trees. Since it is too cold and rocky for the white man to make farms, he has not gone there and cut down the trees. There

are no cities or houses, nothing but forests where the Indian hunts game and lives in his tent or hut as he has always lived.

To trade with these Indians, the white men have built stores at the edge of the Indian country. They are called trading posts. When the warm days of June come, and the ice is all melted, the keeper of the post at the mouth of Great Whale River on the coast of Hudson Bay begins to look up the river

(Fig. 15), watching for canoes to come around the bend. At last he sees one coming. In front sits Sulian, an Indian woman, paddling, and in the stern sits Otelne, her husband, paddling and also steering. They are coming to the post to trade. In the middle of the boat are a boy, a girl, a baby, and a dog. The boy's name is Akusk (arrow); the girl's name is Wabogun (flower). The baby, whose name is Wabshish (little white hare), is safe and warm in a bag tied to a board. The canoe contains one thing more, a very precious thing—a big bundle of fur skins. These furs mean the Indian's wages for a whole year, his pay for a hard winter's work in the forest.

8. Camping at the trading post.—The keeper of the post shakes hands with Otelne. Otelne opens the bale of furs, and the first afternoon he trades a few muskrat skins for some flour, beans, bacon, and canned peaches. Then the Indians have a feast, and camp at the post. Day by day other canoes come down the river, bringing more families, until the post looks like a great picnic ground. The Indians talk of happenings of the year—of how they were lost in storms, of how their canoes



Photo. Dept. of Int., Ottawa, Can.

Fig. 14. An Indian family at a trading post with their pets and baby. What white men's things and what Indian things do you see?

were upset, of how they fell through the ice, of the bears they caught, and of the wolves that chased them. They wonder what has happened to the Indians who have not come back. They race with each other in their canoes, and the different groups of families, or tribes, play match games of lacrosse. This game, which the white men learned from the Indians, is now the national game in Canada, just as baseball is in the United States.

9. Going to the hunting grounds.—In August the trading is over and the Indians start back to the hunting grounds for another year's work. The canoe is loaded full. Instead of the bale of furs, Otelne has in his canoe a new tent, a sheet-iron stove, some stovepipe, twenty-five steel traps, a rifle, a thousand cartridges, some fishhooks and fishline, a wood saw, knives, axes, buckets, blankets, and a lot of white men's clothes. He did not buy any shoes because he would rather have the moccasins he himself makes.

It is hard work to paddle the heavy load up the river against the swift current. Presently the roaring noise of a waterfall is heard, where the stream jumps down over some rocks. The canoe cannot pass



Courtesy of Revillon Frères

Fig. 15. Canoe, river, and rapids in the rocky north woods country. How will the men get the canoe above the rapids?

this, so they all get out and carry the canoe and all of its load, bit by bit, along a little path that leads to the quiet water above the falls. Here they re-load and paddle on again. Soon they come to another carrying place, or portage, as it is called, and have to unload again. They are not afraid to leave their belongings while they go back to the foot of the falls, for no Indian would steal anything he found in this way.

You can see why the Indians do not use white men's boats; no white man's boat is as light to carry as is the birch-bark canoe.

You can also see why they do not take much food from the post. They cannot carry it in addition to things they need for camping and hunting. They must have the tent and the traps, so they take only enough food to last until they are far enough from the post to find game.

After a few days' journey they come to a place where the stream widens into a lake, with a little bit of land, or an island, in the middle of it. Then

for many days they go on up the river and across more lakes. Over and over again they have to carry their goods around rapids. The dark branches of spruce, hemlock, and fir trees often hang over the stream. Trout, pickerel, and other fish dart in behind the rocks around which the currents flow. Sometimes a muskrat, a beaver, or an otter swims quickly into his hole in the bank. But sometimes the rifle is too quick for him, and the Indians have fresh meat for supper.

Each day they pass the mouths of little streams and the main stream gets smaller and smaller. At last they can go no farther in the canoe, because the stream has grown too small and rocky. They carry their canoe over a hill, and find here another stream that flows the other way, and they go down it, still carrying their canoe around its waterfalls. This place where the two streams start in opposite directions is called a divide. (See Fig. 54.) Every hill becomes a divide or water parting when it rains, because the top of the hill divides the water flowing down one

side from that flowing down the other. The Indians know where the narrow divides or good portages are, as well as country boys know where they can catch rabbits, or as city boys know where they can find a place to play.

10. The Indian hunting.—For many days Otelne steers his canoe downstream, camping on the bank each night. One morning in late October he finds the ground covered with snow and the lonely river with



Fig. 16. The Dipper and the North Star. Have you seen them in the sky? See how two stars in the dipper point to the North Star.

ice. Otelne knows that the season for canoeing is over and that the time for trapping has come. The next morning he starts away from his tent and walks twenty miles in a large circle, fixing a round of traps in the forest as he goes. When he cannot see the sun, he keeps his direction through the forest by watching the moss, which grows only on the shady side of the tree trunks. He can keep his direction at night, too, if he can see the stars; for long before white men came, Indians had noticed that one star always seemed to be in the same place. They call it the Great Star. We call it the North Star. The "pointers" in the Great Dipper point to the North Star. (See Fig. 16.) Have you ever seen The Great Dipper and the North Star? Indians watch them every clear night.

As he makes his circuit in the forest, Otelne sets a trap wherever he sees in the snow the tracks of any of the animals he wants to catch. He drags strong-smelling meat along the snow, hoping that animals crossing this trail will follow it to the traps. After a day or two he goes around again, putting fresh bait on his traps and taking out the animals that have been caught.

Can you see Otelne as he visits his traps? He walks on snowshoes to keep from sinking into the snow, which is often three feet deep. His big dog pulls a sled on which are an



Photo. Am. Mus. Nat. Hist., N. Y.

Fig. 17. Beavers and their house. How many beavers can you find?

axe, a package of raw smoked meat for lunch, and a roll of blankets. Akusk, the twelve-year-old boy, goes with his father, from whom he learns all the Indian arts and the ways of the animals in the forest. It is all the schooling he ever has. How would you like to receive your education in such a way?

The first trap is empty and the bait is gone. Otelne puts fresh bait in it. The second trap holds a fine mink, dead and frozen stiff. His skin is worth many cartridges at the post. The third trap has in it the foot of a muskrat. Some scraps of fur lying around show that a hungry animal has raided the trap and eaten the muskrat! The big dog, Wagush, smells

the trail, whines, and jumps about so that he upsets the sled. Otelne turns him loose, and away he goes yelping through the forest, until at last his regular bay-ing tells Otelne that he has treed



Photo. U. S. Dept. Agr.

Fig. 18. Otters. Their fur is brown. Full-grown, they measure from three to three and a half feet from head to tip of tail.

the animal. It is a lynx. The rifle cracks, and the lynx is placed on the sled along with the mink.

At nightfall, ten miles from the tent, the hunters come to a shelter made of boughs. When Otelne set the traps, he built this shelter to keep off the cold wind, for he knew he would have to sleep here on bitter cold nights. He builds a roaring fire in front of the shelter. For supper, they eat the mink, giving the scraps and bones to Wagush; then they wrap themselves in thick, warm rabbit-skin blankets, and lie down with their heads toward the shelter, their feet toward the fire, and the dog beside them. Two hours later Wagush wakes them with a growl. Two wolves are prowling around under the spruce trees. Wolves fear fire, so Otelne throws more wood on the blaze, and the wolves slink away. At dawn the Indians start on their round again.

They kill a bear! This is great luck, for now they have meat enough to last for weeks. Even with the help of Akusk and Wagush, Otelne has hard work to drag their bear on the sled six miles back to the tent. All three are so weary that they rest all the next day. Sulian, the mother, skins the animals, takes care of the skins, and smokes the meat. That is her part of the work. You may be sure that the children are glad to see their father and brother come back, for there is not another family within twenty miles. There is not a single white man within a hundred miles.

After hunting a few weeks, Otelne finds that game is getting scarce. He must move to a place where no hunters have been at work. He and his wife hide the canoe in the evergreens, put the tent and all their things on two sleds, tuck the baby down in the blankets, and trudge all day through

the forest. When night comes, they put up the tent on the snow, cut evergreen boughs to make a thick carpet, and build a fire in the sheet-iron stove. They have a moving day like this about every two or three weeks all through the winter, so that the family may get many furs to trade for the white man's tools and supplies. When the trapping season ends, Otelne is two hundred miles from the post, and it takes weeks of canoeing to go back there for summer trading. He carries with him on the journey a bundle of smoked meat to eat where game or fish cannot be found.

Each summer some Indian families that went out for furs the winter before do not come back. Sometimes Indians get lost and freeze to death in terrible blizzards. If the hunting is bad, they starve. The father may be drowned, or may break his leg and freeze to death away out in the forest. Then the mother cannot get enough game to keep the starving children alive. The fur gatherers and their families must be strong and brave, for they have a hard, cold life in the far North. But it is easier than it used to be before the Indians were able to trade with the white men for guns, knives, axes, traps, and fishhooks.

11. The Indian games.—When all goes well with the fur gatherer, the boys and girls in the little tent play many games. They are fond of checkers. To make a checkerboard, they split a piece of wood out of a log, smooth one side of it with an ax, mark it into squares with a knife, and blacken some of the squares with charcoal. For men, they saw off short pieces of a stick as thick as your thumb. Jackstraws is another favorite game. For straws there are tiny canoe-paddles, knives, guns, snowshoes, snow shovels, and canoes, all whittled out of wood, making a queer-

looking pile. Then they have one camp-fire game in which they shake up eight disks of bone in a bowl. This game is so difficult that a white man once spent three days learning it. The rules for counting the score would fill three pages of a book like this one. White men who hunt with the Indians like them and say they are good companions.

The white men from the trading posts bring the furs down to our great cities, where they are made into muffs, coats, scarfs, and gloves. While the Indian is back in the forest following his traps, we can see people wearing the furs in almost any part of the United States.

QUESTIONS

1. What do you admire most in the Indian? 2. Why does not the Indian have to make everything he wears as the Eskimo does? 3. What clothing does he make himself? 4. How does the Indian canoe differ from the Eskimo kayak? 5. Have you looked for stars? 6. Where do the traders get their supplies?

7. Examine the rabbits in Figure 9. Which one could escape most easily from wolves and foxes in the winter time? 8. Make a drawing of the return journey of the Indians. Show the main stream, the mouths of little streams, a lake, an island, the source of a stream, and a divide. 9. How does the Indian boy tell a mink's footprint from a rabbit's? Would you know either? 10. After looking carefully at Figures 13 and 14, write a story about an Indian child in the North Woods. 11. Can you find out something about the beaver? How does he build his house? (Fig. 17.) How does his tail differ from that of the otter?

12. If you have a globe in your schoolroom, or a large map of North America, find Eskimo land and the Indian's country. Find them on the smaller map in your geography. Find your country. 13. Why is the fur of the mink more valuable than that of the wolf or bear? 14. What makes rapids? 15. Was Akusk educated? Is



Fig. 9. A quiet day on the codfishing banks. Find the float and the line to the weight. Would you enjoy being in the dory when the sea is very rough?

his education better than yours or not? Why? 16. How is the Indian who lives now richer than the earlier Indian?

THE CODFISHERMAN

12. The fishing shores and fishing banks. —On the eastern edge of the Indian's country is the Atlantic Ocean. Along its shore live white men. This shore country is a part of Labrador, and out in the sea not far off is a big island called Newfoundland. It is never very warm in Labrador. In winter the snow covers the ground for many months, and it is so cold that the stormy ocean freezes over near the shore. In summer the sea is sometimes dotted with big, very big, pieces of ice floating down from Eskimo land, which is still farther north. These great blocks of ice are called icebergs, a name meaning ice mountain. Some of them are many times as large as any building you ever saw, as large as fifty city blocks, or as a big farm. Sometimes polar bears and seals may be seen riding on these icebergs.

The shores of Labrador and Newfoundland are so cold that no one thinks of try-

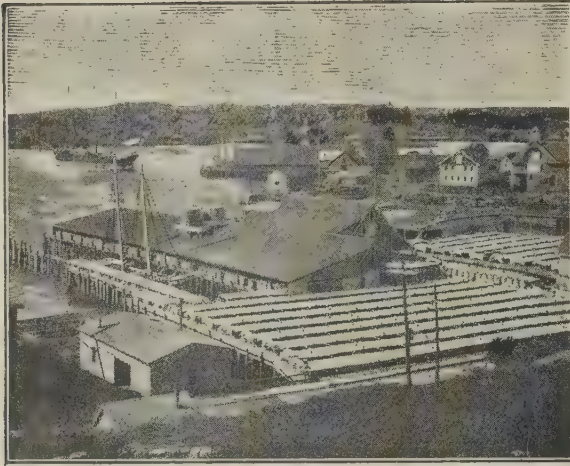


Photo. Brown Bros., N. Y.

Fig. 20. A harbor on the coast of Labrador. See the long racks of drying cod. A ship loaded with codfish is sailing away from the warehouse.

ing to grow food to sell. There are few farms, and many of the people do not even have gardens. If a man does make a garden, it is sometimes so small that he can cover it up at night with an old sail to keep off the August frost, which would kill his beets and potatoes if they were not covered.

We found that the Eskimos live on seal meat, and the Indians of the forest on fish and game. The only wealth of the people living along the coast of Labrador and Newfoundland comes from fish. Strange to say, there are many fish in this ice-cold sea, most of them codfish. In the spring when the shore ice breaks up, the fishermen put on their rubber boots and oilskin coats and hats, and go out in sailboats to the best fishing places, called banks. A fishing bank is a place where the water is so shallow that men can drop lines fifty or sixty feet down from their long boats to the bottom of the sea.

13. Catching codfish.—When the codfishermen have sailed out to the banks, they take in the sails of their big boats, called schooners, and drop anchor. Then

two men get into a small rowboat called a dory and row out a little distance. Here they drop overboard one end of a trawl line. A trawl line is a heavy cord about half a mile long, and is carried coiled up in a tub in the dory. A short line two feet long is tied fast to the trawl at every six feet. These short lines, with baited hooks on the ends, swing in the water near the bottom and catch the codfish. Near each end of the trawl is a weight to make the cord sink, and an anchored float to show where it is. One of the two men in the dory rows, and the other one throws the line overboard until it is all out. Then, with their little boat tossing over the rolling waves, they row back to the other end of the trawl, pull it up, and begin to take off the fish and bait the hooks again. When they have a dory-load of fish, they row back to the big boat, where other men clean the fish and put them in ice, or salt them down in barrels.

When the schooners come back to the fishing village, the old men who do not go to sea, the women, and the boys and girls



Photo. Brown Bros., N. Y.

Fig. 21. Codfish spread out to dry on the coast of Labrador. Why are there no trees on the hills? Could you have a garden if you lived in Labrador?

take the salted fish and spread them out on frames to dry.

When the codfish are dry and ready for market, they are called stock fish. They are as hard as boards, and while they are dry will keep about as well as boards. These dry, salted fish will keep for months in a store in a hot country where fresh fish would spoil in an afternoon. Therefore dried codfish are sent to many countries far, far away from the icebergs of Labrador.

Codfishing is a dangerous business. Thick clouds of fog often settle over this ice-cold sea more quickly than showers of rain come down on us. In the thick fog, where one cannot see fifty feet, the men in the dories sometimes lose their way. Then they miss the schooner and their little boats drift out to sea, where the storm waves upset them. Sometimes great storms come up and upset the schooners or drive them against the rocky coast, and the men are drowned. The sea is often cruel, but it charms men and they love it.

14. The codfisherman sells and buys.—If the codfisherman does not meet with shipwreck, he has a pretty good business. The men who buy the fish pay large sums of money, and the ships that carry away the codfish bring back all kinds of goods to the fishing villages. When the fishing is good, the codfisherman buys lumber to build a house, stoves and coal to heat it,

clothes and rubber boots to keep himself warm and dry, flour, meat, and groceries to eat, books to read, and instruments to make music. The stores in a codfishing village have as many things in them as have the stores in any other village, and many kinds of fishing tackle beside. If a man has plenty of one thing to sell in any place where ships come and go, he can buy anything.

15. Cape Cod.—

Labrador is not the only country in the world with a cool climate and fishing banks off the shore. There is a place in our country called Cape Cod, because the people there used to catch so many codfish, and many codfishing boats still go out from the cities of Boston and Gloucester in Massachusetts.



Photo. Brown Bros., N. Y.

Fig. 22. A fleet of fishing schooners.

QUESTIONS

1. Copy the following, filling in the blanks correctly: The Eskimo travels on a —, the Indian in a —, and the codfisherman in a —.
2. When the Labrador fisherman starts out for his spring catch, where is the Indian trapper getting ready to go?
3. Where did Peary see the North Star when he was at the North Pole?
4. Why is a tall light house needed on the tip of Cape Cod?
5. Draw and name a trawl, dory, schooner, anchor, bait.
6. Name and describe some other things besides a light that help the fisherman along the coast in a storm or fog. (See Sec. 217.)
7. Name some of the dangers of the fisherman's life.
8. Why do men love the sea?
9. Ask your teacher to read you a poem about the sea.

NOTE.—Teachers will find more narratives of simple living in different parts of the world at sections 244, 268, 297, 319, 351, 358, 415, 434, 449, and 459.



Photo. U. S. Coast and Geodetic Survey

Fig. 23. Two boundary markers. *Left*—One on top of the main divide of the Rocky Mountains, latitude 49° N., longitude 114° W. The man is standing in Canada. *Right*—A surveyor and the boundary stone which marks the corner of the states of Idaho and Washington on the line between the United States and Canada. (See Fig. 64.)

THE EARTH AND MAPS

MAPS*

16. How animals find their way.—You remember that in summer the Eskimos catch wild ducks. These birds make their nests and hatch their young on the ground among the many flowers that bloom in the bright sunshine of the short summer. When the weather grows cool, and food becomes scarce, the old ducks take the young ones south to a warmer country where they can get food. Sometimes they go to the southern part of the United States and stay there until spring. Then back they go, all the way to Greenland or Alaska, stopping from time to time for food. Find Greenland and Florida on the map, and see how near you live to their path. (Fig. 51.)

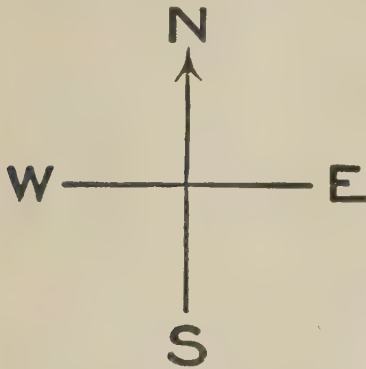
Other birds also go north and south. All animals know better than men how to find their way about the world. You can put a pig or a cat in a bag and carry him several miles to a place that he has never seen, but, if he can get free, he will find his way home in a day or two.

Suppose you wanted to go to Eskimo land? How would you find your way? Otelne, the Indian, finds his way by the sun and the stars. (Sec. 10.)

17. Finding directions by the sun.—When men are lost in the woods or even on a great, level, open place, they sometimes wander around in a circle, when they think they are walking in a straight line. But if they would watch the sun they could keep going in a straight line. To understand how this is done we must learn about directions. To keep things clear to our minds, we have named our two hands

* The teacher should go over this lesson with the class and help beginners get the great idea of how useful maps are. Several class periods will be required. Thoroughness here will be amply repaid. Geography means little if one does not know maps. See preface.

left and right. Then we say we move to the left or to the right. We can also go forward or backward. That makes four directions. To make it easier to find our



way around out-of-doors, we have named four main directions: east, west, north, and south.

East is where the sun is in the morning.

West is where it is in the evening.

In this country the sun is toward the south at noon. Can you point south? If you stand with your face to the north, your back is to the south, your left hand is to the west, and your right hand is to the east. Face each of the different directions and, as you stand in each position, tell which way your hands point. Walk a few steps toward the north; toward the east. Do this in the school yard. At noon, find a place where the edge of the building, a fence post, or the flag pole casts a shadow directly to the north. Mark the edge of this shadow with a piece of chalk or stick, and call the line your "north-and-south" line. A man lost in the woods could help himself find the right direction by making such a line. The wild ducks can follow the north-and-south line day or night.

18. Telling time by the sun.—Take a piece of chalk and at noon mark on the floor of the schoolroom the line of the shadow of the edge of a south window or a south door. Now you have an indoor north-and-south line. You can watch the shadow creep across the floor. Mark the

one o'clock shadow line and the two o'clock shadow line. That is the way people used to tell time. Even now there are some people in the Appalachian Mountains in this country who tell time by the shadow of a nail driven into the south window sill.

19. The compass.—White men have a handy means of keeping their direction in the woods; or on water when they are out of sight of land. They use a compass. A compass is a little needle made into a magnet. Have you ever seen a magnet, a piece of metal that picks up needles and nails or anything made of steel or iron? We say that the magnet attracts the other piece of metal. The compass needle is a little magnet balanced so that it can swing freely. (Fig. 25.) Now a place on the earth's surface far to the north has the same attracting power that a magnet has; and it attracts one end of the magnetized needle so that it turns toward this place in northern Canada. No one knows just why the needle points toward this northern place. It is because of some force which we call magnetism. You can hold a com-

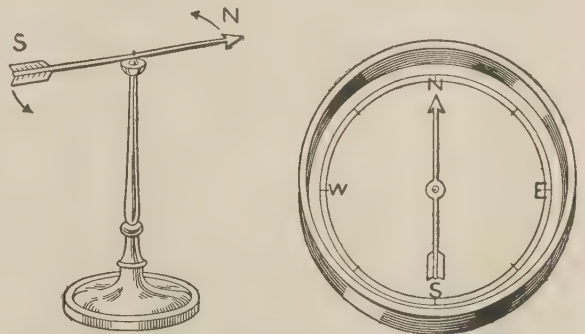


Fig. 25. A compass needle on a stand, and a compass such as men use to guide them. The little arrows show how the point of the needle on the stand will turn toward the north.

pass and turn it around, but the needle will point in the same direction all the time.

See the letters on the compass. (Fig. 25.) N is for north; E, for east; W, for

west; and S, for south. The direction that is half way between east and south we call southeast (S. E.). What is the direction half way between west and south? What does northwest mean? northeast? Can you point northeast? southeast?

20. **The map.**—Men use the compass to find the way when they are out on the sea, or in the woods, or in wild places, when the sun does not shine. But where there are railroads and streets and buildings, it is quicker and easier to use a drawing which shows the roads and streams and hills of the country. Such a drawing is called a map. There are little maps of towns and cities which travelers can use to find their way around the streets, or to reach the post office, the station or other buildings; there are maps made for people who drive automobiles, to show them where the good roads are and how to get from one town to another; and there are maps that show where countries and oceans are.

Here is a map of a little place in the

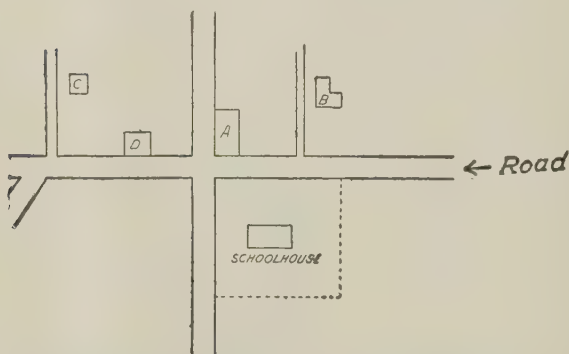


Fig. 26. A map showing roads and buildings in a country village and boundary of the schoolyard. A, store; B, storekeeper's house; C, teacher's house; D, bank. One inch = 200 feet.

country. Two roads cross each other near five buildings.

Try to make a plan or map of the roads or streets near your schoolhouse. Can someone make this map with chalk on the floor? Perhaps it can be made in the

school yard. Draw lines to show the schoolhouse and the school yard in this map. Let the lines on the map have the same direction that the roads and streets and walls have; that is, if the wall runs north and south, make the line that means the wall runs north and south. Can you put on this map some other things that you see near the school or on the way to school? Now lay a piece of paper down beside this map and copy it on the paper with a pencil that makes heavy lines. Be sure you understand this plan or map. Point out the various roads or streets.

Which side of the paper is south? Mark on your paper map as it lies on the floor an arrow pointing north. North on the map is then also north in the room and north out-of-doors. Hang the paper map up on the north wall. Hang it so that the north side of the map is toward the ceiling. Map makers usually put the north at the top of the map, so we put ours that way. You see the east is on the right, the west is on the left, the south toward the bottom.

Now take the map down and lay it on a table or desk. Point out on the map the south; the west. Turn the map part way around and again point out the directions *on the map*. Lay it on the floor in a new place. Hang it up on the side of the room opposite the place where you first hung it. Be sure you understand the directions *on the map* as it hangs in each of these places, because knowing map directions will help you greatly in all your study of geography.

21. **The map of your neighborhood.**—Make a map of the roads or streets on which you walk in coming from your home to your school. Can you show on your map two ways to come to school? If there is a map of your neighborhood, see if you can find on it five places that you

have seen. Most of the schoolhouses in the United States are shown on good maps made by the United States Geological Survey. Write a postal card to the United States Geological Survey, Washington, D. C., asking if there is a map showing the location of your schoolhouse. Such a map is a good thing to have. It shows the roads and streams and hills and railroads of the neighborhood, and tells how high the hills are. It costs only ten cents.*

22. Scale of maps.—Examine this plan or map of a room. (Fig. 27.) Suppose the room is twelve feet square, and your plan of it is two inches square. Then two inches on your map show twelve feet of distance. Now make a plan of the same room that is one inch square. We have made two maps showing the same room, but the maps are of different size, or different *scale*. One has six feet to the inch, one has twelve feet to the inch.

All maps are drawn to some scale. If a great distance is shown by an inch of map, the map is small and we say the scale is small. If a short distance is shown by one inch, the map must be larger, and we say the scale is large. Look up some of the maps in this book and see the different scales that are used. (Figs. 40, 51, and 64.)

Now look at Figure 26. Is it a large or a small scale map? With your rule, measure on the map the distance from the store to the schoolhouse. According to the scale, how many feet apart are they? How many feet is it from the storekeeper's house to the teacher's house? from the crossroads to the fork in the road?

23. Kinds of maps.—There are many

kinds of maps. Some show the things nature makes, such as rivers, lakes, and islands, and the height of the country above the level of the sea. These are called physical maps. (See Fig. 48.) Find high land and low land on this map. The high

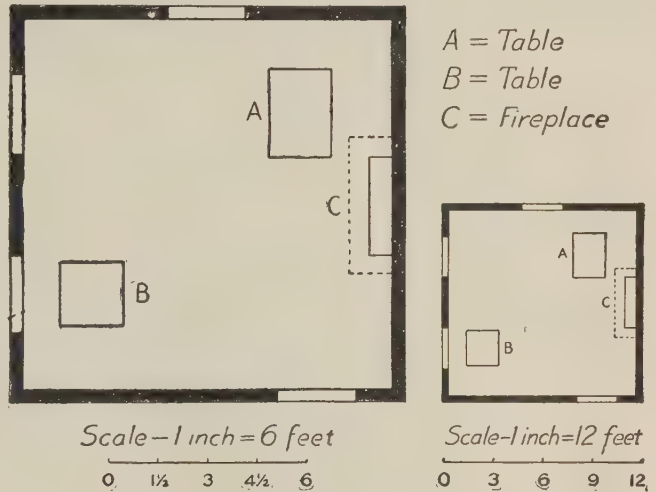


Fig. 27. Two maps or plans of the same room; the larger one is on a scale of 6 feet to one inch; the smaller one is on a scale of 12 feet to one inch. How long is the room? How wide?

land is colored brown, and the low land is colored green. Find islands, lakes, rivers.

Maps can show many things. Some show where much rain or little rain falls (Fig. 88). Others show where certain plants or animals or men are found. For instance, Fig. 60 shows where the Indians and the Eskimos live.

Some maps show the things man has made, such as cities, railroads, and the boundaries of counties, states, and countries. These are called political maps, and on them the different countries are often printed in different colors. (See Fig. 51.) Point out two different countries on this map. What separates them? Sometimes a boundary is a river, or a mountain, or a lake. Sometimes it is a line which goes right across smooth, level fields and is shown only by markers (see Fig. 23), in the same

* Thorough drill on the local map is very important at this point to fix the map idea.

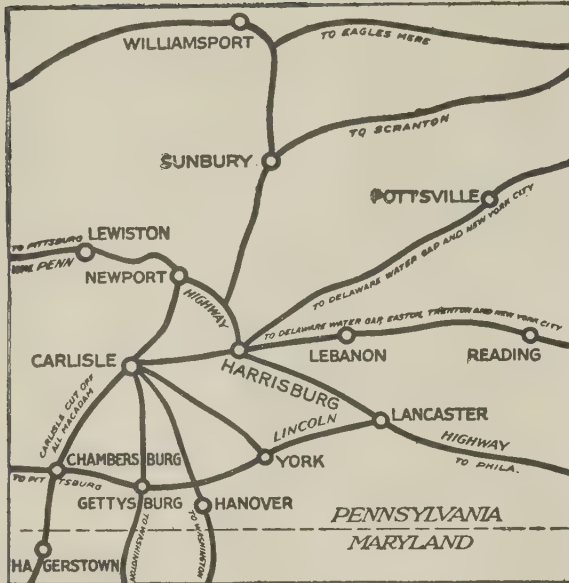


Fig. 28. An automobile map. It shows the best roads between towns.

way as a man's land is separated from his neighbor's land. Did you ever see the corner stones between two lots of land?

You can surely find, by this time, on the map of North America (Fig. 51) the big island of Newfoundland where the cod-fishermen live, and the island of Cuba where some of the dried codfish are sold, and the cold ocean where the Eskimos, hunting for seals, paddle around among the ice cakes in their kayaks.

QUESTIONS

1. How can you tell direction by your shadow at noon? Face northeast, northwest, southeast, southwest. 2. If you have at home, a road map, or a map of your country, or even of another country, bring it to school. Put it beside the other children's maps. Try to find on these maps: a boundary line, a river, a lake, a town, a mountain, a north-south line. 3. List all the things you have found on the maps. 4. Draw a map that has a river, a lake, an island.

5. Point out the place where you live on the map of the United States (Fig. 64); on the map of North America (Fig. 51). 6. On the physical map (Fig. 48), locate your home. Is the land about it high or low? Find and name the nearest mountains, lake, and river. 7. Show the

route from your home to a large city; to Eskimo land; to Labrador.

8. How many miles to the inch are represented on the map of North America in this book? (Fig. 51.) On the map of the United States? Which map shows the greatest amount of country?

THE GLOBE, THE CONTINENTS, THE OCEANS, THE HEMISPHERES

24. The earth is round.—The ant on top of the big balloon was sure that the balloon was flat, much flatter than the garden where he lived. But men could easily see that it was round. The earth looks flat to us just as the balloon looked flat to the ant. But the earth is round, rounder even than a balloon. It is, indeed, almost a perfect ball or sphere. Look at an apple or a ball through a tiny hole in a piece of paper held close to it, and you will see that a tiny part of even so small a round thing looks flat. The ant could see so little of the balloon that it looked flat to him. We can see so little of the world at any one place that for a long time men thought the earth was flat.

There are several ways to prove that the earth is not flat. One proof is the fact that men have traveled entirely around it. An ant or a fly on an apple, by going straight ahead, can walk around the apple and thus come back to the place from which he started. In the same way, people often go around the world. It is a long journey, especially if one travels on a line around the middle of the earth, where it is twenty-five thousand miles around. If you set out to walk around the earth and walked at the rate of ten miles a day, it would take you nearly seven years; but an airplane, going one hundred miles an hour, would go around in less than eleven days.

If we could look at the earth from the moon, it would look as round as the full

moon. (Fig. 31.) At the seashore we can see with our own eyes that the world is not flat. As a ship sails away from the land, we see at first the whole ship. Then it seems to sink out of sight, till at last we see only the tops of the masts or sails, or the smoke from its smokestack. As a ship comes in, on the other hand, it gradually rises into sight over the curve of the sea (or earth), until at last, as it comes nearer, we see the hull or body of the ship. This is much like two

ants peeping at each other over the top of a baseball. (Fig. 30.) Each sees the other's head first, while the curving surface of the ball still hides their feet.

25. The round map or globe.—The best map of a round world is made on a ball, because a ball is round like the world. Such a round map we call a globe. On it we mark off the land regions and the water regions of the earth's surface. Only one-fourth of the whole surface of the earth is land. The rest of it is water—the great sea, with land sticking up out of it here and there. The parts of the sea which are divided from each other by the land are called *oceans*.

If you look at a globe or

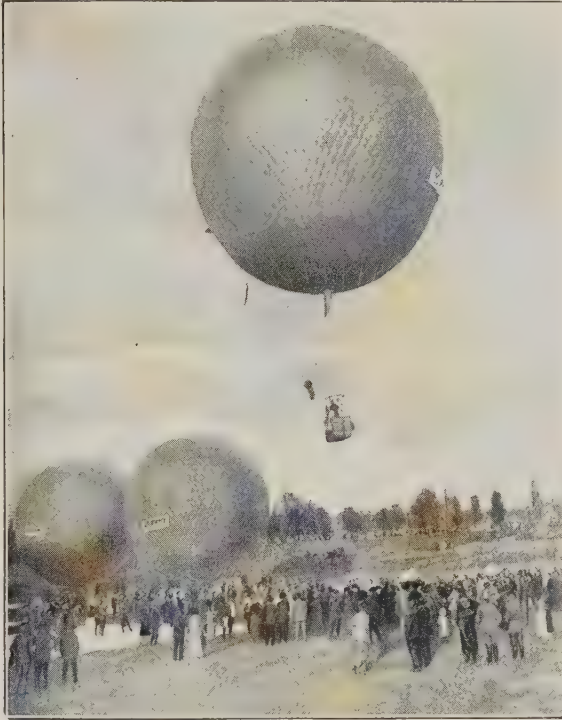


Photo from Wide World Photos
Fig. 29. Balloons used in the United States Army to help observers see long distances. Sometimes men travel long distances in them.

No map can show them all. Some islands are bare rocks only, no bigger than a table. Some are large enough to have a few trees on them. It would take you only an hour to walk around some islands. Others are so large that you could walk for days and weeks and not come to the end of them.

Then there are the largest parts of land, which we call *continents*. Pick out these largest bodies, or continents, on a globe or on the maps. (Figs. 31, 36–39.) The continents are North America, where we live, South America, Europe, Asia, Africa, and Australia. (Fig. 45.)

The continents divide the oceans from one another, and sailors long ago gave differ-

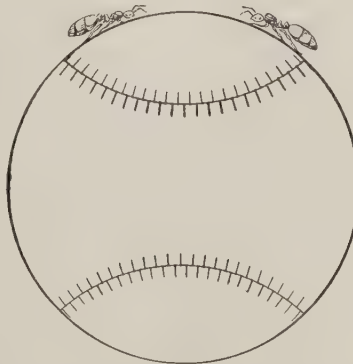
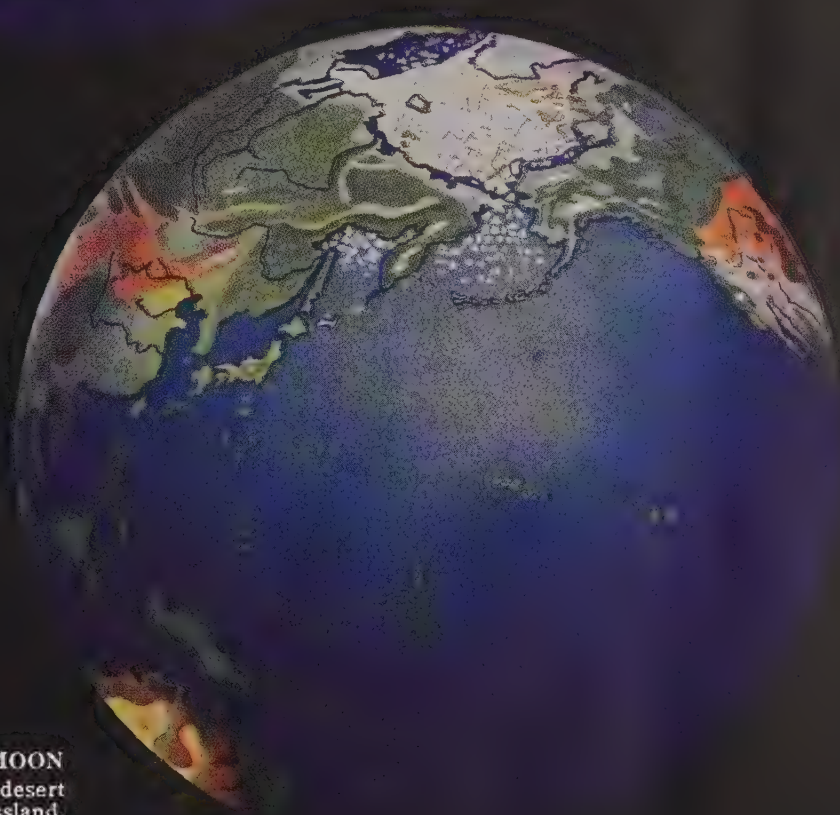


Fig. 30. What part of one ant does the other ant see first as they approach each other on the baseball?



Fig. 31. FOUR VIEWS OF THE EARTH
Blue, water. Blue green, tundra. Light green, cultivated ground, grass and woodland. Dark green, forest.



AS SEEN BY THE MAN IN THE MOON

Yellow, desert. Light brown, semi-desert and poor grassland. Dark brown, grassland. White, snow and ice.

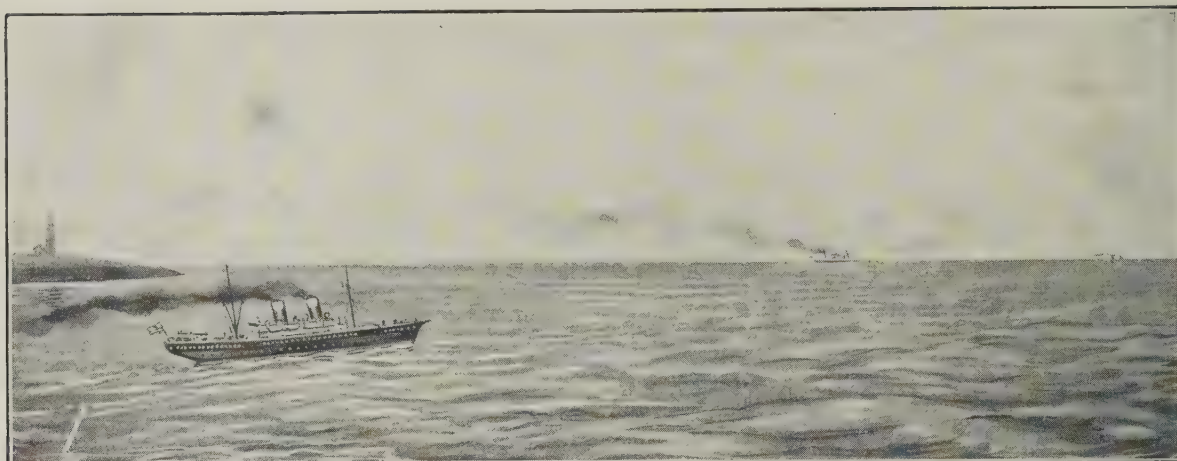


Fig. 32. A lighthouse on a point of land or cape, buoys marking the channel, and ships disappearing as they sink behind the rounded surface of the sea. What parts do you see of the ship that is farthest away from land?

ent names to different oceans, or parts of the great sea. Find them—Atlantic Ocean, Pacific Ocean, Indian Ocean, Arctic Ocean, Antarctic Ocean. (Fig. 40.) Which is nearest to your home? (Fig. 64.)

26. The earth turns around.—The earth is spinning around and around all the time. We do not notice the turning motion because everything we see is moving with us. We are like the fly in a wagon which does not know that it is moving. Tie a string around the stem of an apple, or put a ball on a string as the girl is doing in Fig. 34. Perhaps a basket ball or a pumpkin can be used. Hold the round object up by the string and spin it. The earth turns around like this once every day. That is why we have night and day. You will understand this if you hold the spinning object up to a lamp or a bright window and let it spin on the string. Do you see that one side is always in the light and the other side is in the shadow? It is the same with the earth, or world. It is in such a position that the sun always shines on one side of it. The part of the earth that is turned toward the sun has light. This makes day. The part that is turned away

is in the shadow. This makes night. (See Fig. 35.)

We say the sun “rises” in the east and “sets” in the west, but we know it is the earth, not the sun, that does the moving. In the morning, when the sun seems to be coming up over the edge of the world in the direction of the east, we see it because our particular spot on the earth’s surface has turned far enough toward the east so that the sun’s light can shine on it. People began saying “sunrise” and “sunset” long, long ago, when even the wisest of men thought the sun did swing around the earth, very much as a ball on a string swings around a boy’s hand.

You see that an apple spins around on the stem. If the stem went all the way through, you could easily see that the apple spun around both ends of the stem. (See Fig. 34.) Perhaps you can push a knitting needle, or a piece of wire, or a thin piece of wood through an apple, and let the apple spin around this rod. Such a wire or rod may be called an *axis*. We can imagine one in the earth, on which the earth spins around. One end of the earth’s axis always points toward the North Star. It

is called the *North Pole*. The opposite end is called the *South Pole*. Your teacher will show you the poles on the globe, or on Fig. 45.

37. **The North Pole.**—For a hundred years men tried to get to the North Pole, but they always failed. Finally, in 1909, Robert E. Peary, an officer of the United States Navy, reached the North Pole after

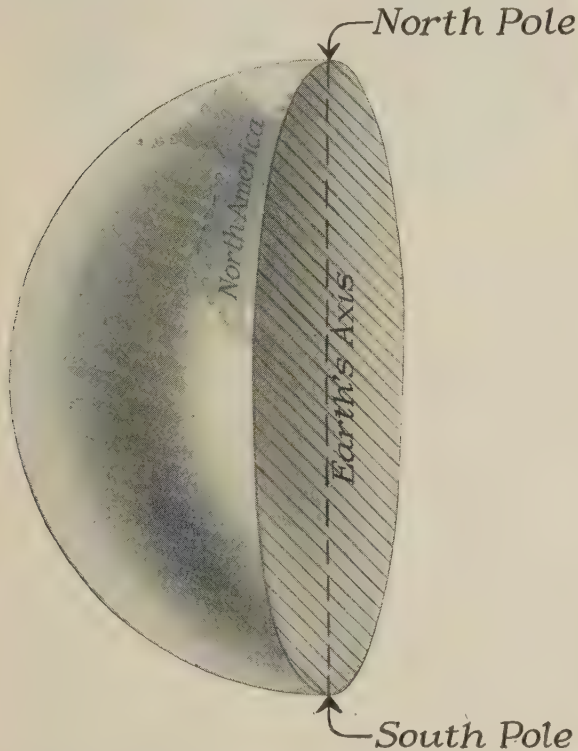


Fig. 33. A drawing of a globe cut in two to show the earth's axis and poles. Point out where the equator would be. If a croquet ball were cut in two, could you draw a line for its axis?

many trips and many years of hard work. He found only an ordinary piece of ocean covered with ice, over which he and the Eskimos walked, while the huskie dogs pulled their sled loads of provisions. In 1926 Richard E. Byrd, another officer of our Navy, flew over the North Pole in an airplane. Three days later Roald Amundsen, a Norwegian, crossed the Pole in an airship. In 1911, Amundsen reached the

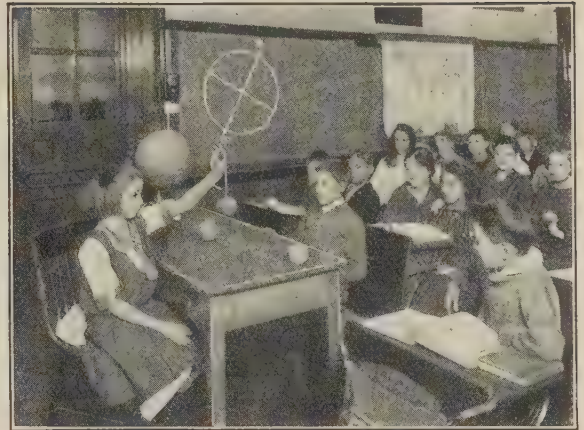


Fig. 34. A school girl with an apple, showing how the world turns around.

South Pole, where he found a very high land entirely covered with snow and ice.

The North Pole is as far north as man can go, and the South Pole is as far south as man can go. If we are going toward the North Pole, we say we are going north. It makes no difference on which side of the world we are, whether we are in Europe, Asia, or Africa, or whether we are one mile or ten thousand miles from the Pole. If we are going toward the North Pole, we are going north; if we are going toward the South Pole, we are going south. Point out north and south directions on your spinning apple, calling the stem end the



Fig. 35. A globe, showing that half of the spinning earth is light while the other half is dark; and that the North Pole stays dark for many days at a time, while the South Pole has sunshine for many days at a time.



Fig. 36. The Western Hemisphere, showing meridians and parallels.



Fig. 37. The Eastern Hemisphere, showing meridians and parallels.

North Pole. If you have a globe, point out north and south directions on it. Do this for five places in Fig. 40.

28. Hemispheres.—Now cut your apple into two equal parts, a north half and a south half. If we could cut the globe in this way, we should have two halves of a globe or sphere, each called a *hemisphere* (*hemi* means half). The one with the North Pole for its center—the northern half—we call the Northern Hemisphere; the one with the South Pole for its center we call the Southern Hemisphere. The line half way between the poles is called the *equator*, because it is equally distant from the poles. The circumference, or distance around the earth at the equator, is about 25,000 miles; the diameter, or distance straight through the center of the earth, is about 8000 miles. Perhaps you can take a pen and ink and mark the poles, the equator, and the outline of one of the continents on an orange or on a new baseball. It will not hurt the orange nor the ball. If you have a globe, look at it to find out in which hemisphere

North America is. In which one is Europe? Australia? South America? Asia? Africa?

Now take another apple and cut it in two halves in such a way that you split the core. (Fig. 33.) In the same way we could divide or mark off the globe into halves by a line running around it and passing through both poles. A long while ago, men decided that they would pretend to divide the world into two parts that way by a line in the Atlantic Ocean between Europe and America. The land to the east of that line we call the Eastern Hemisphere, and that to the west we call the Western Hemisphere. In which hemisphere is South America? Africa? Europe?

29. The Old World and the New World.—Men have lived in the Eastern Hemisphere much longer than they have in the Western Hemisphere. The Eastern Hemisphere is often called the Old World, and the Western Hemisphere is called the New World. All the people mentioned in the Bible lived in the Eastern Hemisphere.

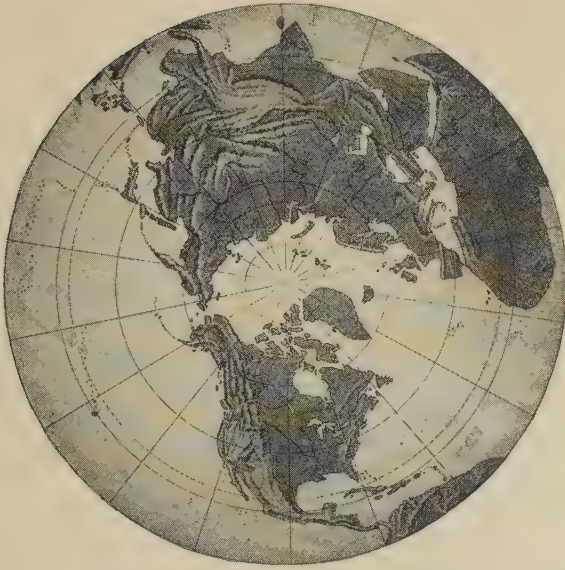


Fig. 38. The Northern Hemisphere, showing meridians and parallels. Point out Eskimo land.



Fig. 39. The Southern Hemisphere, showing meridians and parallels.

They did not know that there was any America out in the great western sea. Their ships were too small to sail on this wide ocean.

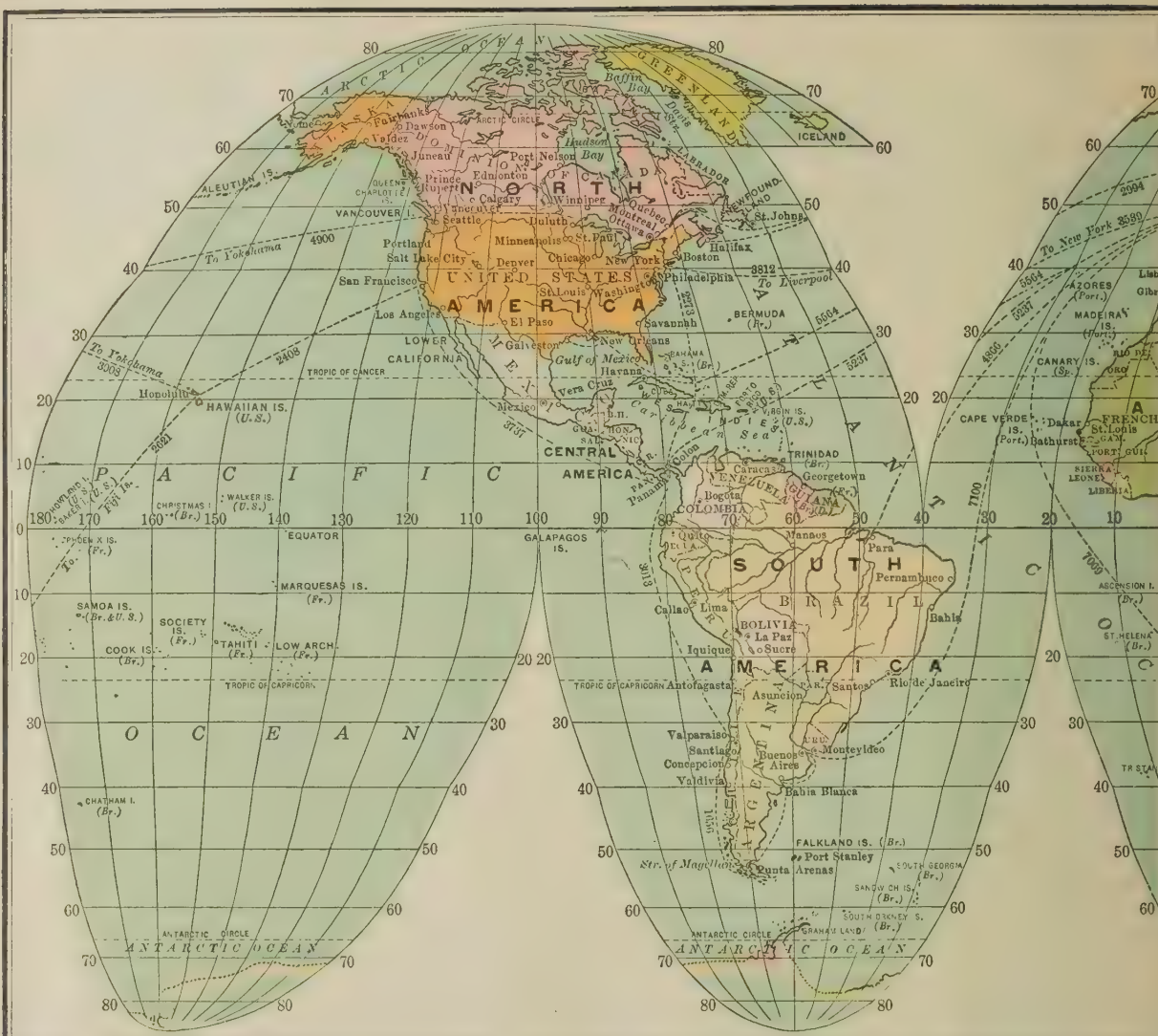
After a long, long time, somebody invented the compass. Then sailors were able to have a clearer idea of where they were as they sailed on strange seas, and they could take longer voyages. At last, in 1492, a brave Italian named Christopher Columbus started from Spain with some other men to sail across the western ocean. He thought that the earth was round, and that if he sailed far enough he would reach Asia. This would be an easier route for ships trading with the people in India and China than the long voyage they had had to take before this time. His three ships sailed on and on and on.

For seventy days they sailed. The sailors, afraid that they would never again see home, threatened to throw Columbus overboard and to go back. But just as they were about to turn back, they saw land birds, and then they knew that they

must be near to land. On the seventieth day of the voyage, October 12, 1492, the weary sailors landed on an island, San Salvador, or Watling Island, one of the group we call the Bahamas. Columbus did not know he had discovered a new continent, but thought he had reached India. Although in later years he made three more voyages to America, he died still thinking he had reached India. It was he who called the natives of this country Indians.

Nearly thirty years later, in 1519-22, an expedition led by a Portuguese named Magellan succeeded in sailing entirely around the world:

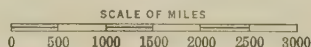
30. Globes and flat maps.—The globe is the truest of all maps, but it is costly to make one large enough for all our purposes. Flat maps are easier to make and handier to use. Although maps printed on paper are flat, the parts of the earth which they show are really curved like the surface of a ball or of an orange. If you take a piece of orange skin and press it out flat, you will



POLITICAL MAP OF THE WORLD

ON GOODE'S HOMOLoSINE EQUAL AREA PROJECTION

Distances shown in statute miles

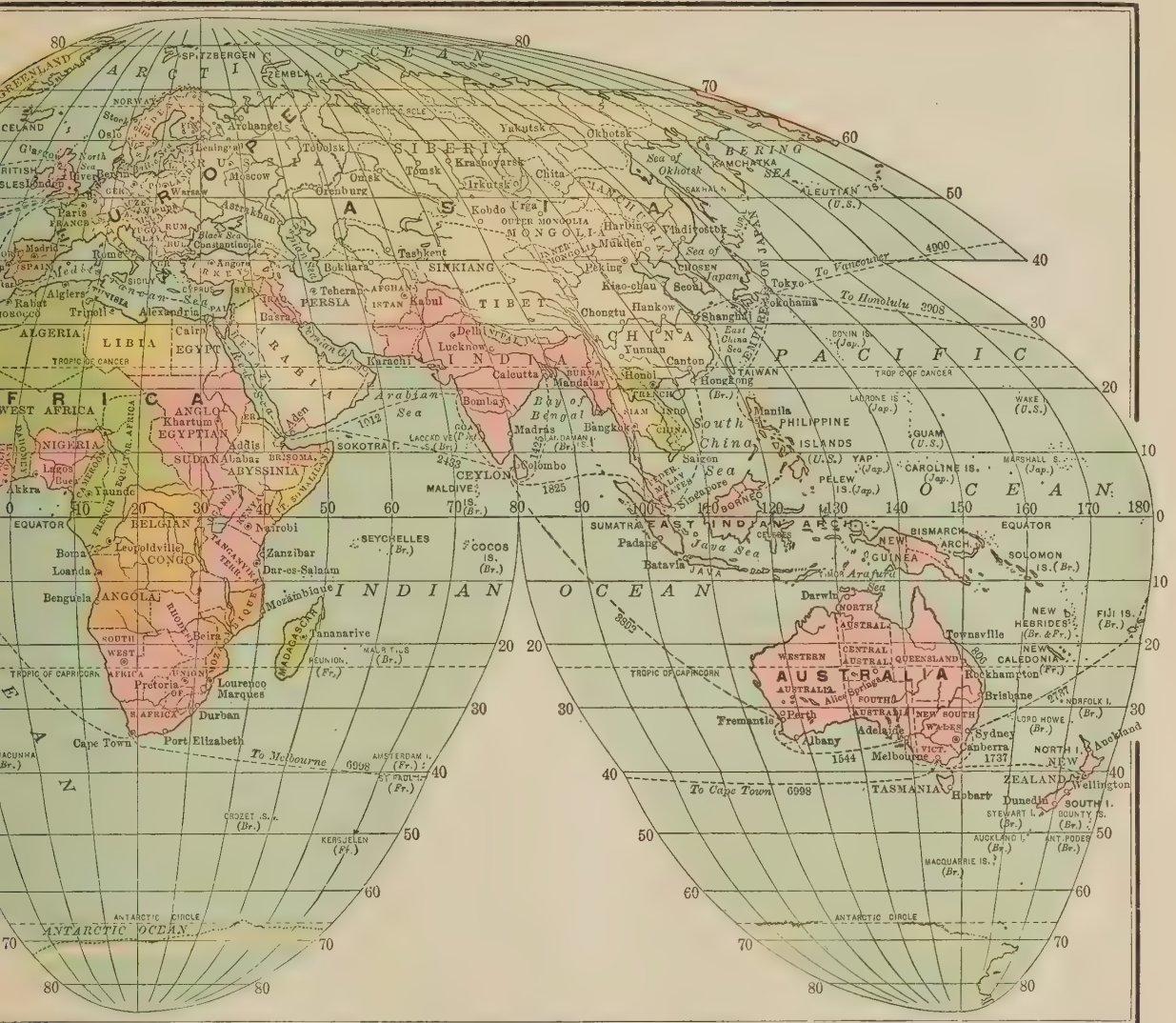


COLONIAL POSSESSIONS

United States	Portugal
Great Britain	Spain
France	Netherlands
Italy	Denmark
Belgium	

The Homolosine projection by Professor J. Paul Goode, 1923, is an equal area projection; that is, a square inch anywhere on the map represents the same number of square miles of the earth's surface as any other square inch on the map. For this reason areal distribution may be shown upon it without error. The continents are given better form than in any other world map projection. It is greatly superior to Mercator's projection for nearly all teaching purposes.

Fig. 40.

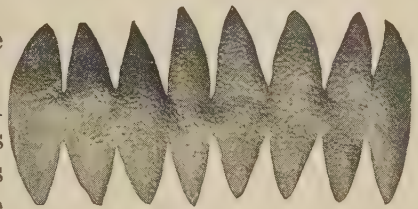


The world is round, like an orange. Maps are flat, like sheets of paper. How can we show the surface of the round globe on the flat map? That is a hard problem.

The best way to get an idea of this problem is to skin an orange carefully in one piece and spread the skin out flat like this. (See p. 28.)

It is not hard to do. It shows you how the surface of a globe looks when spread out flat.

Professor J. Paul Goode did something like that with the skin of a globe when he made this map. He has stretched it a little to get it flat so that this map shows all the different countries and continents in true relative size, and more nearly in their true shape than any other flat map of the whole world shows them. That is why we use it here. It is the truest map there is—of the whole world—on one sheet.



By permission of J. Paul Goode; Copyright, 1923, by the University of Chicago Press

Fig. 40.

either squeeze it up in the middle or tear it on the edges. In the same way, when a map is made on flat paper, parts near the



Fig. 41. A whole orange skin carefully cut and spread out flat on a board. The map of the world (Fig. 40) was made on much the same plan, except that in the map the solid parts were stretched to the right and left so as to fill in the blank spaces between them.

pole are made to look too large. (See Figs. 36 and 40.) When we try to show the surface of the whole round globe on a flat map, we have to stretch the parts near the poles a great deal. You can see that very well if you will carefully take off the skin of an orange. Perhaps it will break or tear a little, but try to get it off in one piece. Then straighten it out flat and pin it to a board. (Fig. 41.)

Map makers have learned how to draw east-west lines called *parallels* and north-south lines called *meridians*, so that continents and countries on maps are shaped very much as they are on the globe. (Figs. 36 and 51.) We will learn more about these lines in the next chapter.

QUESTIONS

1. What motion of the earth causes day and night? 2. Did you ever take a long journey? Where did you go? In what did you travel? How long did it take? 3. How far is it around the earth at the equator? 4. Copy the following, filling in the blanks. Keep the map of the world open before you: North America is between the — Ocean and the — Ocean. The —

Ocean is east of South America and the — Ocean is — of South America. The Indian Ocean is — of Asia. The — Ocean is north of North America. (Fig. 51.) Australia is in the — hemisphere. 5. Point to the sunrise part of the sky; the sunset part.

6. Where do you see a globe in the picture, Fig. 35? What is the girl doing with the apple in Fig. 34? 7. In what direction does your shadow point at nine o'clock in the morning? as you walk home from school? 8. With some round object show how the earth moves. 9. Explain the meaning of strait, continent, ocean. Find one of each on a map.

10. Why did it take so many years to find the Poles? 11. Write the names of the continents on the blackboard. On a globe or picture of a globe, locate each. 12. In which continent is China? Mexico? Brazil? Cuba? France? 13. Why is the globe the truest of all maps?

LATITUDE, LONGITUDE AND ZONES

31. Telling where places are.—How do we tell someone where a house is located in a city? First we need a starting point of some kind. In the city of Washington this starting point is furnished by two streets which cross each other, one going east and west, and the other going north and south. Name these streets. (Fig. 43.) All that part of the city north of East Capitol Street and east of North Capitol Street is called Northeast. The streets named with numbers run parallel to North Capitol, and the streets named

with letters run parallel to East Capitol. The houses in the block from East Capitol Street to A Street have numbers below 100, those between A and B Streets have numbers beginning with 100, and so on, each block beginning with a new hundred. The same thing is true of the house numbers on the streets with letter names. Therefore a house



Fig. 42. A half of an orange skin spread out flat on a board. See how it broke when pressed down.

numbered 220 Third Street, N. E., must be on Third Street between B and C. Thus we can locate a house in Washington by number, street, and section.

In much the same way we locate a city, a lake, or a river, that is, by giving its distance north or south from the equator and its distance east or west of some particular place. (Fig. 44.)

32. Latitude.—If you look at the map (Fig. 45.) you will see some lines running across the map. All parts of each line are the same distance from the equator. These are called *parallels* and are used as a means of telling how far a place is north or south of the equator. The distance from the equator to the North Pole or from the equator to the South Pole is divided into ninety equal parts, and each part is called a degree of latitude. A degree of latitude equals about seventy miles. Each parallel on the map marks a certain degree of latitude, or distance from the equator. Twenty degrees north latitude means twenty degrees north of the equator. Twenty degrees south latitude means twenty degrees south of the equator. How many miles north or south would that be?

33. Longitude.—Now look for the lines on the map that run north and south. These are called *meridians*. We use them to measure distances east and west of some particular place. Take a ball or some other round object and mark on it the places for the north pole and for the south pole. Now draw some straight lines from pole to pole. You see that they all come together at the poles and become farther and farther apart as they come near the equator. We can draw a meridian from pole to pole on the map, and make it pass through some city which we will choose as a point from which to measure. Then we

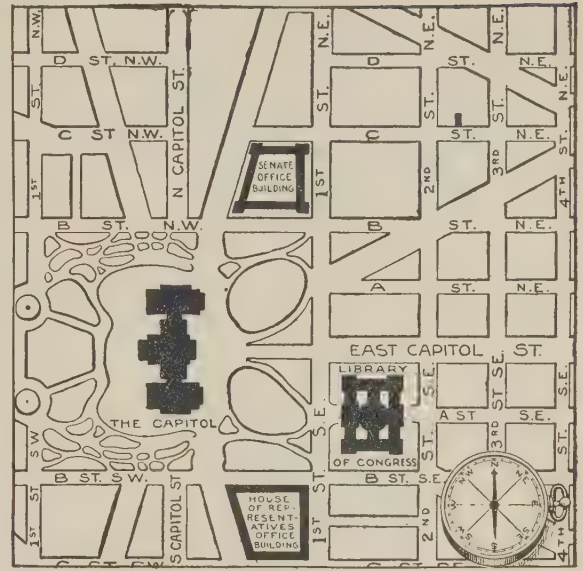


Fig. 43. Map of a part of Washington, D. C., showing how the names of the streets tell where they are.

say that the meridian of some other place is so many degrees east or west of the city whose meridian we have chosen and therefore called the prime meridian.

When distance is measured in degrees north or south it is called *latitude*; when it is measured in degrees east or west, it is called *longitude*. The numbers of degrees of latitude are on the sides of maps, and the numbers of the degrees of longitude are at the top and bottom. Look on the globe or at a map (Fig. 48) and see the parallels of latitude and the meridians of longitude. One degree of longitude is about seventy miles wide at the equator but, toward the poles, the meridians draw closer and closer together until they all meet. (Fig. 38.)

The longitude on our maps is counted east and west of the meridian that passes through an observatory in the city of Greenwich, now a part of the city of London, England. (Fig. 40.) If a place is seventy degrees west of the meridian of Greenwich, we say it is seventy degrees west longitude, or 70 degrees W. If it is

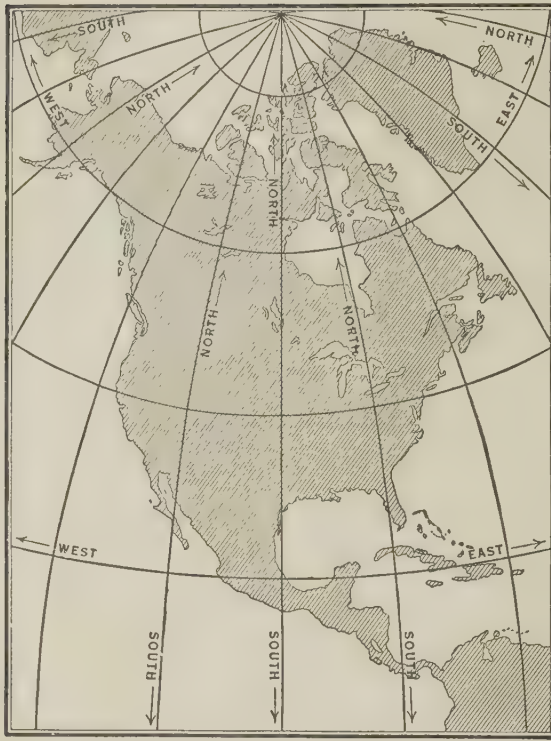


Fig. 44. Map of North America, showing how meridians and parallels are used to tell where places are, just as streets are used in Washington. What direction is South America from Alaska?

thirty degrees north of the equator we say it is thirty degrees north latitude or 30 degrees N. See how much this is like the location of houses in Washington City.

There are 360 degrees of longitude around the world, going from Greenwich around to Greenwich again. How many degrees of latitude are there in going around the world, by passing through both poles?

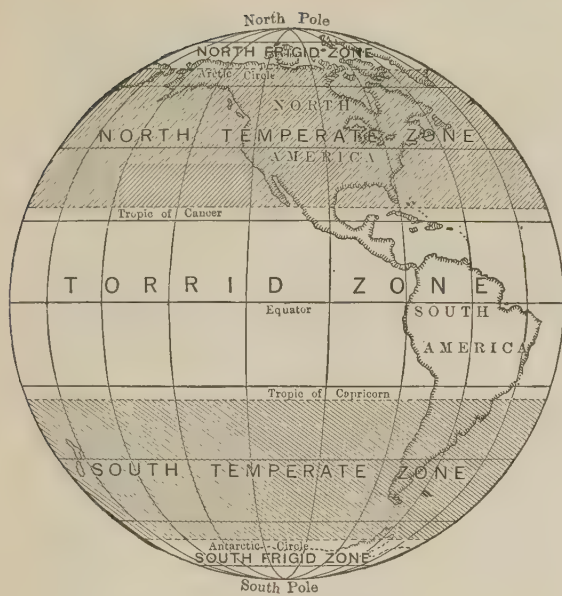
34. Zones.—There is still another way of locating places. The surface of the earth is divided into five wide belts running around the earth east and west, just as the parallel lines do. These belts are called zones. When we say that a place is in the Temperate Zone or in the Frigid Zone or in the Torrid Zone, we mean that it is on that part of the earth's surface.

Look at the map (Fig. 45) and name the zones.

You have noticed that in our part of the country the sun is higher in the sky at noon in summer than it is in winter. If we went far enough south, we should reach a place where, on at least one day in the summer time, the sun would be directly overhead at noon. All the land on which the sun shines directly down at noon at some time in the year is called the Torrid Zone, meaning hot. The Torrid Zone extends $23\frac{1}{2}$ degrees, or about 1600 miles, on each side of the equator. The lands in this zone are hot, and there is no winter there. In some places the trees stay green all the year. No part of the United States is in the Torrid Zone.

In Eskimo land, the sun shines all night in the summer time, while in winter there are some days when the sun does not rise at all. All that part of the world in which there are days, or even one single day when the sun does not rise at all, is called the Frigid Zone, meaning cold. There are a North Frigid Zone and a South Frigid Zone, of which the centers are the North and South Poles. The land between each of the two Frigid Zones and the Torrid Zone is called the Temperate Zones, because the climate here is not so hot as in the Torrid Zone nor so cold as in the Frigid Zone. As a matter of fact, some parts of the Temperate Zones are as hot during part of the summer as the Torrid Zone, and in winter are cold like the Frigid Zone. There is a North Temperate Zone and a South Temperate Zone. Which Temperate Zone has the most land?

NOTE.—Much help from the teacher is needed with the study of this chapter. The map must be used again and again, having the children trace parallels and meridians and find the latitude and longitude of familiar places. See manual referred to in preface.



Western Hemisphere



Eastern Hemisphere

Fig. 45. Maps showing the Western and Eastern Hemispheres and the zones. In which hemisphere and zone do you live?

QUESTIONS

1. Find the ninetieth meridian and the thirtieth parallel. What city is where they cross? 2. What use do men make of latitude and longitude? 3. Copy the following, filling out the blanks. Keep the map of North America before you: The — meridian passes through Hudson Bay and the Gulf of Mexico. The — parallel passes through Alaska and Hudson Bay. The Panama Canal is just south of the — parallel. The — meridian passes along the eastern coast of Florida.

4. Make up five problems like these. Let the other pupils solve them: (1) How can you tell in which zone any given country lies? (2) Make a map of your home neighborhood. 5. In which zone or zones is your home? the northern part of Greenland? Panama Canal? France? Europe? North America?

6. Find the following meridians and parallels on the margins of the map of the United States (Fig. 64). Trace the meridian with one finger until you come to the parallel crossing it named in the problem, then write the name of the city nearest this crossing:

DEGREES.	CITY.	DEGREES.	CITY.
90° W. }		90° W. }	
30° N. }		35° N. }	
80° W. }		105° W. }	
40° N. }		40° N. }	

7. In what longitude was Admiral Peary when he was at the North Pole? If you have no globe you can easily answer this question if you look at a raised umbrella. What part of the umbrella would be the North Pole? What parts the meridians? (Figs. 38 and 39.)

8. How would you use an umbrella to show what an axis is?

9. Which hemisphere has the more land, the Eastern or the Western? The Northern or the Southern?

10. The Frigid Zones are separated from the Temperate Zones by imaginary lines called the Arctic Circle and Antarctic Circle. Find a large island near the Arctic Circle.

11. Make a map of the world that is shaped like the orange skin in Fig. 41. Now put the equator on it; the Arctic Circle.

12. Which is longer, the equator or the Arctic Circle? (Figs. 38, 39 and 45.)

13. The Temperate Zones are separated from the Torrid Zone by imaginary lines called the Tropic of Cancer and the Tropic of Capricorn. Find two large islands near the Tropic of Cancer; one near Capricorn, two that are crossed by the equator.

14. Look at Figs. 35 and 36 and tell which continent extends farthest South, Africa, South America, or Australia.

15. Which continent has more land north of the equator, Africa or South America?

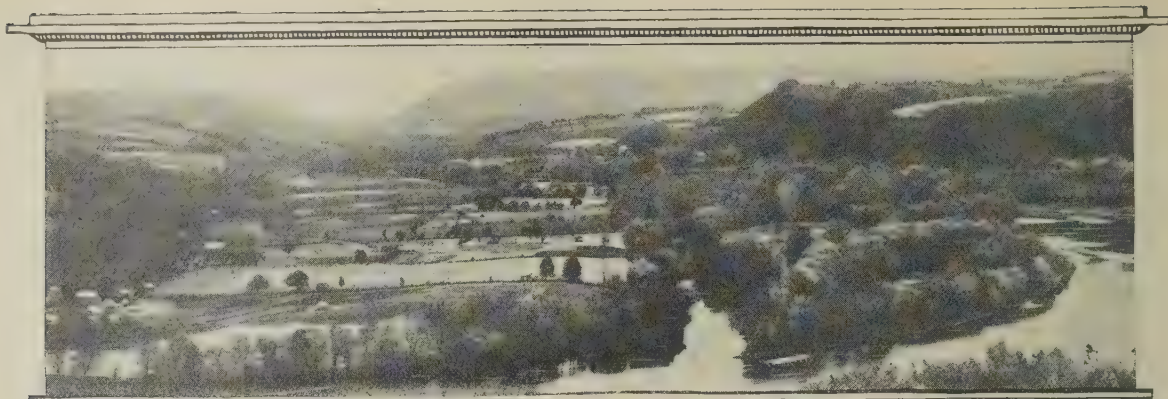


Photo. U. S. Geological Survey

Fig. 46. Looking westward in the Delaware Valley toward the Delaware Water Gap. See the deep gap which the river has cut in the level-topped mountains. Such a gap is also called a pass. Can you find an island on the right?

NORTH AMERICA

THE CONTINENT

35. Size.—We live in North America. It is a large continent. Only two continents, Africa and Asia, are larger. Did you ever walk three miles? Five miles? If you walked ten miles a day, it would take you about ten months to walk across the continent of North America from Atlantic City on the east coast to San Francisco on the west coast. (Figs. 198 and 64.) From what ocean to what ocean would you go? Let us imagine we take such a journey in an automobile, going one hundred miles each day. We shall be a month on the road, and all that time shall be in our own country, the United States. We shall see places that are very different from each other, and we shall find that many different kinds of land make this one great country.

36. The Atlantic Plain.—Let us start from Atlantic City, a great pleasure city or resort, built on the sandy shore by the side of the sea. Here people go for vacations, to see the ocean, to bathe in it, and to breathe the fine, salt sea air. Near

Atlantic City, we find the country to be level, or nearly level—a plain we call it. As this level land is near the Atlantic Ocean, it is called the Atlantic Plain. You can look in all directions for many miles and not see a hill as high as a man's head. We meet many people in automobiles who are enjoying the good level roads. Toward evening of our first day's journey, after crossing the Delaware River, we see rolling hills, and pass green fields, houses, and villages.

37. The Eastern Highland.—On the second day, we see long, steep hills a thousand feet high, so high that it would take us several hours to climb on foot to the top. Such very high hills are called mountains. If we could look down on these mountains from very high up in the air, they would look something like the peaked roofs of long sheds. They are called ridges or mountain ranges. (See Fig. 46.) From the top of one ridge we can look across and see another ridge, and



Fig. 47. Beach front hotels, and bathing on the gently sloping beach at Atlantic City, N. J.

Courtesy of Traymore Hotel, Atlantic City

another beyond that, all of them forest-covered. We can also look down at the lower land, or valley, between our ridge and the next. The top of the mountain on which we stand is a divide between the streams on each side of it. On one side of the mountain we find a place where one of these streams starts as a tiny brooklet of clear water running out of the ground. This is a spring. Big rivers sometimes start in little springs.

Our automobile road follows a stream that has worn a narrow path or valley through these many ridges. High hills seem everywhere, and they are almost entirely covered with trees. We are in the Appalachian Highland. After a while we come to a place where men are bringing little cars, loaded with coal, right out of the hillside. (Fig. 200.) The coal is dumped into freight cars on the railroad tracks. There is a layer of coal under that hill, and men called miners go in under the ground and dig out the coal.

We pass through many villages and towns where miners live, and we see buildings having tall smokestacks from which clouds of smoke roll out. We reach a great city, Pittsburgh, Pennsylvania. It is sometimes called the Smoky City because the factories there burn so much coal. The city is on a river, the Ohio River. On it we see steamboats and flatboats loaded with coal ready to float downstream to other cities far away from the coal mines.

38. The Mississippi Valley.—Soon after crossing the Ohio River, we come again to level country. This plain is called the Great Central Plain. For several days, we ride across this flat land. It seems never to end. On both sides of the road are farmhouses and big barns, and fields of corn, wheat, oats, hay, and grass. (See Fig. 79.) We see cows, horses, sheep, and pigs in the fields, and chickens catching grasshoppers by the roadside. People are working in the fields. We meet many automobiles and pass through many vil-



Fig. 48.



Fig. 49. This is a relief map of North America. It is really a picture of a model of the continent. The physical map on the opposite page is another way of showing the same things. Look at the physical map and then at the relief map, and find the following on each: Mississippi River, Florida Peninsula, Appalachian Mountains, Missouri River, Hudson Bay, Gulf of Mexico, Lake Erie, Rocky Mountains, Great Central Plain, highlands of the Great Plains between the Rocky Mountains and the Missouri River, Mexican Plateau, low plain by the Gulf of Mexico, Ozark Plateau, mountains in the island of Haiti. On the Physical Map, what does green mean? dark brown? yellow?

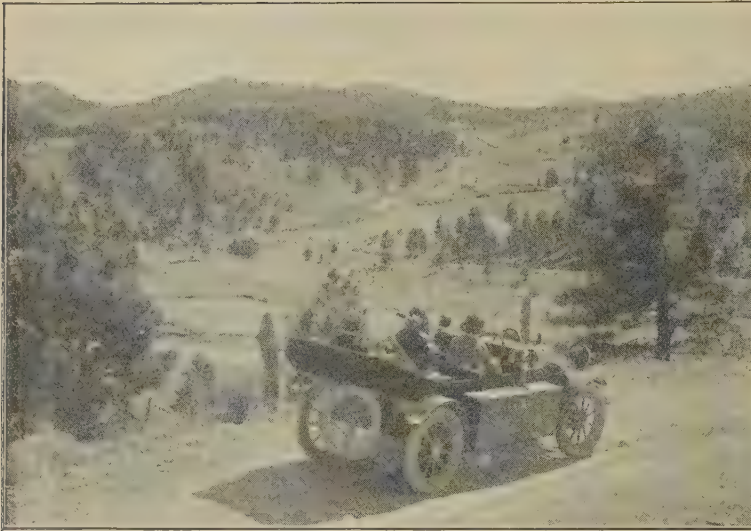


Photo. Wiswall Bros., Denver

Courtesy of National Park Service

Fig. 50. One of the views we see high up in the Rocky Mountains. We are in the pass through which our road crosses the divide.

lages and small towns. We often cross railroads, and there is a line of telephone or telegraph poles along nearly every road we see. After riding for several days through this rich country, we cross a wide, muddy river, the Mississippi. Here at Keokuk, Iowa, men have built a dam of cement that holds back the mighty river and makes it form a great waterfall, higher than a two-story house. Because of the mighty force of this fall, the water can be made to run waterwheels to make electricity, which is carried by wires to many distant towns.

We go on across the Great Plain of the Mississippi Valley. As we go we see fewer and fewer fields of grain, but more pasture fields. The houses are farther apart. We do not see many streams, because there is not enough rain here to make many streams or to make many things grow. (See Fig. 52.) The towns are miles and miles apart. There are no trees or fences, but only open country, grass, large herds of cattle, and cowboys riding with them. (See Fig. 95.)

39. The Rocky Mountains.—After riding

four days through this dry and lonely country, we see something shining in the sky far away to the west. Is it a white cloud? No, it is a sharp, high mountain top or peak, so high that its top is covered with snow even in June. This peak we see ahead of us is one of the Rocky Mountains. It is more than two miles above the level of the sea. Other peaks not quite so high are near it, and the mountain between them is not much lower than the peaks. This string of peaks makes a

mountain range, but it is more uneven than those we saw in the east. We soon find that there are other ranges beyond the first one—many others. All together they make a *mountain system*,—the Rocky Mountain System.

When we get closer to the high peak, we see only snow and rocks at its top. Farther down its sides is the dark green of a pine forest. The upper edge of this forest is called the timber line, because no trees grow above this line. The trees here are small and crooked, stunted by the cold and beaten by wind. Above the timber line it is too cold for trees. The tops of high mountains are always cold. That is why the snow stays there in the summer time. Down in the valleys between the ranges we find a few beautiful farms and some towns where miners live. These miners are digging gold and silver out of the mountain sides. (See Fig. 124.)

In the western part of this mountain system, we come to some rivers with banks half a mile deep, and straight up and down like the sides of railroad cuts. These



Fig. 51.

banks are so steep that even if we could climb down them, there would not be room to walk along the edge of the stream in this narrow trough, or canyon. Boats cannot travel on these streams, for the water tumbles over rocks in waterfalls.

40. The Great Basin.—It takes us three days to go through the Rocky Mountain country with its peaks, forests, rocks, canyons, tumbling streams and beautiful valleys. Next we spend four days in a country beyond the mountains, called the Great Basin. People call it a basin because the mountains all around it are higher than the central part, thus making a deep, hollow basin. We have come to the worst part of the journey across the continent. Here it is hot and the roads are dusty, so dusty! Sometimes there is nothing but sand. We do not see any green grass nor any corn fields, but only a few low bushes. Sometimes we have to carry our drinking water with us. Even the sides of the mountains that we pass are bare of growing things.

41. The Sierra Nevadas.—At last we come to another high mountain range, the Sierra Nevada, the last one we shall cross. For hours our automobile climbs up beside a clear, sparkling mountain stream. We reach beautiful, cool, evergreen forests, and our road crosses the range through a pass—a kind of notch or low place in the mountains. Roads nearly always go through passes in crossing mountain ranges. The first white men to cross these ranges had a great search to find the passes before they could reach the other side.

Wonderful forests cover the highlands of the Sierras. Beyond is the Great Valley of California. Down, down we go and are again on level land where there are farms and villages. Here we find also great orchards of fruit trees. It takes a day to cross this valley. Next morning a ferry boat carries our automobile across San Francisco Bay to the city of San Francisco. Big steamships lie beside the wharves. They are loading and unloading freight.



Fig. 52. Some of the people we meet on the plains just east of the Rocky Mountains.

Photo. U. S. Geological Survey

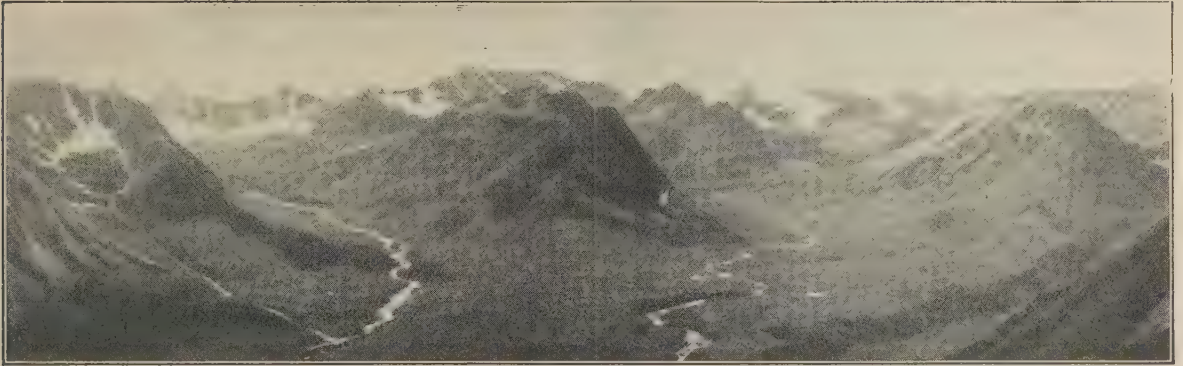


Photo. U. S. Geological Survey

Fig. 53. This picture shows a divide in Alaska, but there are many like it along our road in the Rocky Mountains. See the sharp peaks, the snowfields, the streams, and the gaps. Compare with Fig. 54.

Soon they will sail out into the bay, on into the Pacific Ocean, and far away to cities across the great sea.

42. Crossing the continent again.—Suppose we now cross the continent in the other direction, from south to north; from the mouth of the Mississippi River to the mouth of the Mackenzie River. Find these two rivers on the map. (Figs. 48 and 51.) We shall cross no high mountains such as those we crossed going the other way.

43. Going up the Mississippi.—We shall travel part of the way by boat. Our steamboat starts from the big city of New Orleans near the mouth of the Mississippi River. As we go upstream, we pass green fields of sugar cane, and other fields where black people are picking white cotton from the cotton plants. There are no hills, but only fields and forests. After several days on the boat, we come to the land of corn, wheat, and cattle. This is the great plain of the central Mississippi Valley that we crossed going west. We come again to

Keokuk. How does our boat get around the dam? The boat has to be lifted up in a lock (see Fig. 209) so that it can float away on the water above the dam.

44. The level center of the continent.—At Minneapolis we leave the boat and again go by automobile. For a time we see woods here and there, then for hours at a time we do not see a tree or a hill on the level plain. The land near the boundary between the United States and Canada is as flat as a floor. The farm houses are sometimes without any shade trees at all.

Soon after we cross the Saskatchewan River in Canada, we see a different kind of country, where there are trees and little lakes. No more farms are here. We soon get into the forest again and meet Indians now and then. We are in the great north

woods, the home of the Indians about whom we learned. (Sec. 6.)

45. Down the Mackenzie River.—Here, at a trading post, we go aboard a little steamer that takes us down the Mackenzie River. For many

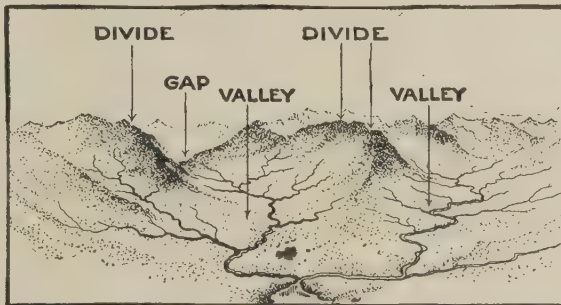


Fig. 54. A drawing to show how divides separate streams. Compare with Fig. 53. See the lake. Count the valleys and the divides.



Photo. Midland Terminal Railway, Colo.

Fig. 55. One of the canyons through which we drive while crossing the Rockies. Why does the train of cars have two engines? How do you know they are working hard? Do you think it was easy to build the railway in this pass?

days we travel past the gloomy evergreen forests, and, as it is summer time, we are nearly eaten by mosquitoes. Though it is summer, we must wear our overcoats part of the time. The trees are smaller and smaller as we go farther north, and finally we see only low bushes and bright flowers. The place where the trees stop growing on account of the cold is a timber line, like the one we saw in the Rocky Mountains. (Sec. 39.) Many wild ducks, geese, and other water fowl have come here to lay their eggs and rear their young on the many little ponds and lakes that dot the plain. We see the tents of Eskimos, for this country is their summer home. A short distance away is the open sea with masses of ice floating about in it. On the shore are mother seals with their little ones playing about, for this is their home too. (Fig. 155.)

46. The parts of the continent.—The relief map (Fig. 49) and the physical map (Fig. 48) show you that the western highlands of North America are much higher and wider than are those in the east. In what direction do these western highlands run? Can you find a place in the western highland from which a large river flows to each of three different bodies of water? What are the names of these streams and of the bodies of water into which they flow?

You see that the coast of North America is irregular, and that several large bodies of water push into the land so far that they are nearly surrounded by land. Such bodies of water are called gulfs or bays. Sometimes they are also called seas. Can you find one of each? Through what strait would a vessel sail in going from the Atlantic Ocean to Hudson Bay? To the Gulf of Mexico? From the Pacific Ocean to the Arctic Ocean?

An irregular coast line is marked not only by bays but by peninsulas. A peninsula is a body of land almost surrounded by water. Name two peninsulas on the east coast of



Photo. Haynes, St. Paul

Courtesy of National Park Service

Fig. 56. A friendly mother bear and two cubs begging food near hotel in Yellowstone National Park, Wyoming.

North America. Name three large islands near the east coast of North America. There is a long group of islands to the southeast called the West Indies. Name the largest island among the West Indies.

There are five large lakes in North America, called the Great Lakes. The water from all these lakes goes into the same river. Name that river. The sea is salty, but these lakes have fresh water. The largest one, Lake Superior, is the largest fresh water lake in the world. Make a little map of these lakes on the blackboard and write on each its name.

QUESTIONS

1. Have you talked with people who have been to places mentioned in this journey? What did they tell you? 2. Try and bring to class some pictures of these places. 3. In Fig. 48, find the Great Basin; the Rocky Mountains. 4. Make a little map of our journey from east to west and from north to south. Show the plains, the great highlands, the two big oceans, and the biggest river we crossed and sailed on.

5. In the picture of the pasture country (Fig. 52), name all the signs which show that the country is dry. 6. Why are there no houses, and so few trees and streams? 7. Look carefully at all the pictures in the chapter on the Plateau States. (Page 81, Sec. 107.) Which one tells you the most interesting story? Why?

COUNTRIES AND CLIMATE

47. Boundaries of the countries.—The political map of North America (Fig. 51) shows the countries that make up the continent. They are Canada and Newfoundland; the United States and Alaska; Mexico; Central America, and the West Indies.

How do we know where one country ends and another one begins? You remember that in Section 23 we learned that the edge of a country is called its boundary. Some boundaries are natural, such as seas, rivers, lakes, and mountains. Name some natural



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Fig. 57. A native village on the Isthmus of Tehuantepec, Mexico. Homemade baskets; a house made without nails; a woman grinding corn by hand.

boundaries of the United States. When a river is a boundary, the line may be in the middle of the river or it may be on either shore. Some boundaries are just straight lines; often these are meridians or parallels. In such a case the line goes right across hills and valleys, mountains, rivers, and lakes, and is marked with boundary stones. (Fig. 23.) Such boundaries are called artificial boundaries, because they are made by man. Point out some artificial boundaries in North America.

48. The settling of America.—Let us see how it happens that there are several countries in this one continent. To find out, we shall have to know some historical facts. In Section 29 you read of Columbus and his wonderful voyage. Although Columbus in 1492 told the people of Europe about the country he had discovered, they



Fig. 58. A tropical forest in the southern part of the United States. See how thickly the trees and plants grow.

Courtesy of Board of Trade, Tampa, Fla.

English colonies said they would be independent of England. Mexico and the other colonies settled by Spanish people in America became independent nearly fifty years later, about 1820. But the colonies which lay north of the United States never became independent of England.

The names of the countries, counties, and cities of North America often show what people were the first settlers. New England was settled by the English. Nova Scotia means "New Scotland." Nearby it on the St. Lawrence

did not hurry to make their homes in our country. Many exploring trips were made to its shores by daring sailors, who did not stay to make a home. At last in 1607, enough Englishmen settled in Virginia to make quite a fair-sized town. Later, other groups of Englishmen settled in other places along the coast. Each group of people from England that settled down to live in the new world was called an English colony. When people from France, Spain, and other countries in Europe came here to live, each country had its colony, or colonies, until the countries of Europe claimed the whole of America, as their colonial possessions. Then the European countries fought each other to decide who should own the colonies. Sometimes one country sold one of its colonial possessions to another country. After a time, many of the colonies became independent countries and ruled themselves. We celebrate the Fourth of July as Independence Day, because it was on that day in the year 1776 that the people of the thirteen chief

River are many towns having French names, because people from France first settled on the St. Lawrence. Now, however, all the Dominion of Canada belongs to England, as do also Newfoundland and Labrador.

Some parts of the United States have French names, like New Orleans and St. Louis, on the Mississippi. This is because that part of the country was first settled by the French. The French language is still spoken a little in New Orleans and there are many people in Quebec, on the St. Lawrence, who speak no other language. Some cities in the western United States have Spanish names, like Los Angeles and San Francisco. This is because the Spaniards first settled that region. Around New York, there are many Dutch names, because the Dutch were the first settlers of New York. Most of the names in the United States, however, are English, such as New York, Boston, or Portland. Some of them too, are beautiful Indian names, as Ohio and Mississippi.

In Mexico, the country which lies south of the United States, the people speak Spanish. The Spaniards settled Mexico and the seven little countries to the south of Mexico. This group of seven countries is called Central America, because it happens to lie in a central place between the continents of North and South America. The narrowest of these seven little



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Fig. 59. An Alaskan miner, sledges, and dogs. Compare the way these dogs are harnessed with the way shown in Fig. 2.

countries is Panama, through which passes the great canal that was built by the United States government to let ships go from ocean to ocean without having to sail around South America. In order that we may take good care of the canal, the United States controls a strip of land ten miles wide from sea to sea, called the Canal Zone.

49. Alaska.—To the west of northern Canada is Alaska, which now belongs to the United States. The Russians first settled Alaska and held it until the United States bought it in 1867. If you look on the map, you will see in Alaska a great river, the Yukon. Gold is now found along this river and steamers go up it every summer, all the way across Alaska and into Canada. With all its great size, Alaska has fewer people in it than you will find in any one of many small cities in the United States. This is because much of Alaska is so cold that very few settlers have gone there.

50. Greenland and its glaciers.—Alaska is cold and snowy, but it has a better climate than has Greenland. Greenland is nearly covered by a great sheet of ice. (Fig. 31.) No trees ever grow there at all. For hundreds and hundreds of miles nothing can be seen but ice and snow. The snow

lies there year after year, and finally packs into solid ice. This ice slowly creeps down the slope of the land toward the ocean, pushes itself into the sea, and finally breaks off in great blocks and floats away. While a mass of ice is creeping over the land we call it a glacier; when a piece of it floats in the sea we call it an iceberg. The icebergs that float past the codfishermen on the coast of Labrador and Newfoundland (Sec. 12), and finally melt away in the warmer water to the southward, have floated down from Greenland in the far north.

51. Different kinds of climate.—Although the northern part of North America is so cold, further to the south is a large region having cold winters and warm summers. This covers all the central part of the continent, and in this region most of the people live. As we travel south the climate grows warmer, until in Central America we find there is never frost except on high mountains, and the trees are green all the year. Why are Greenland and Alaska so cold, while Central America is so hot? Because the sun does not rise very high in the Greenland sky. You know how cool it is, even in summer, in the

early morning when the sun is not very high, and how hot it is at noon. Even at noon in summer, the sun is low in the sky in the far north. But in the far south, in Central America, the sun climbs high in the sky all the year round, so that the climate is very hot in summer, and is warm even in winter. Find another continent (Fig. 40) which you think would have a hot climate in one part and a cool climate in another part.

QUESTIONS

1. Name the countries of North America and tell about their climates. 2. Trace the boundaries between the United States and its neighbors, naming all that you can. 3. On the map (Fig. 64) find the following Indian names: Missouri, Illinois, Buffalo, Huron. Which is a river, a state, a city, or a lake? 4. Do the same for these French names: Duluth, Louisiana, Detroit, New Orleans, Champlain. 5.

From what countries in Europe did people come to settle in the New World? What did the early settlers leave that reminds us of them?

6. If possible, find how your state, county, and town were named. 7. Why do we celebrate the Fourth of July? 8. Why was the Atlantic Plain settled first? Why is the northern part of it thickly populated to-day? 9. Would you rather live in Alaska or Greenland? Why?

10. Do you have a hot or a cool summer at your home? Read the thermometer in your schoolroom. 11. Find five English names in Canada (Fig. 51).

TRADE AND GOVERNMENT

52. Trading with the Eskimos.—Greenland, a part of Eskimo land, is owned by Denmark, a country in Europe. Although

the country is so cold and icy, the southern and western shores are not covered with ice, and a few Eskimos are able to live there. A Danish ship comes once a year to visit these people and trade with them.

There are no railroads from our country to Alaska, or to other arctic lands. The

easiest way to reach them is to go by ship. (See Fig. 60.) At what city might you take a ship for Greenland? for Alaska? How would you travel from your home to reach that city?

Although some of the Eskimos have no trade with the people of other countries (Sec. 5), the Eskimos in northwestern Canada trade with the white men who in the summer go down the Mackenzie river

in steamboats. (Sec. 45.) It is the Central Eskimos, living north and northwest of Hudson Bay, who do not trade with the white men. The straits and bays around these shores and islands are so full of ice that ships cannot get through even in summer.

53. Trading with the Indians of the Great North Woods.—It is much easier to trade with the Indians of the Great North Woods than with the far-away Eskimos, for the southern edge of the Indian country joins the white man's country. Each year the Indians bring their furs to the white man's trading posts (see Sec. 8), and every

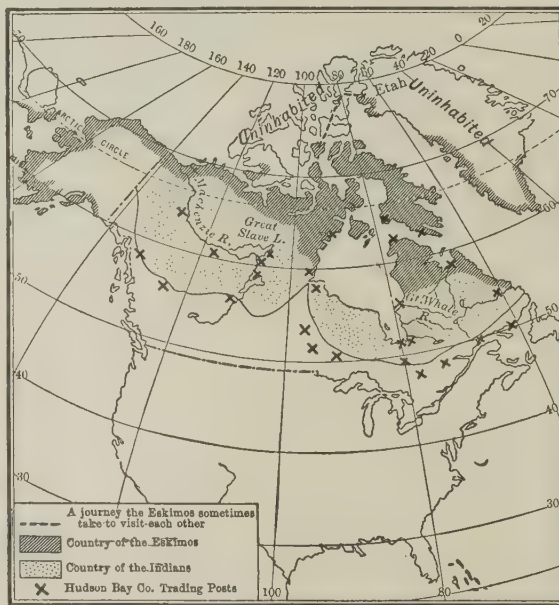


Fig. 60. Map of the northern part of North America, showing where the Indians of the Great North Woods and the Eskimos live.

summer the Mackenzie river lets boats run all the way through the Indian country to a corner of Eskimo land. (Fig. 60.)

54. Government by tribes.—The map shows that the most of the Eskimo land and the Indian land belongs to Canada, but for hundreds and hundreds of miles there is not a Canadian to be seen. There is not a post-office, nor a school, nor a policeman. The Eskimos and Indians govern themselves as they have always done. If several families live near each other, they elect their own chief, or head man, who rules over them. It is only on the southern edge of the Indian country and about the trading posts that the white man's policemen look after the Indians.

55. The white man's country and the white man's government.—South of the Indian country is a part of Canada that has a summer long enough and warm enough for men to grow good crops. This is the white man's country. Here are farms, villages, and towns. One may see roads, railroads, telephones, automobiles, schools, tax collectors, and policemen. There are written laws, and courts where men can settle their differences by talking things over rather than by fighting.

The governments of white men do many



Fig. 61. Map of North America called a population map. It is explained in the lower left-hand corner. Why does the map not tell anything about the Eskimos and the Indians of the Great North Woods? How many places can you find where the people are thickest?

things to help everybody. The people themselves elect men to work for the government. The elected men attend to the building of roads and manage the post-offices, the schools, and the courts. In this way, many helpful things can be done that a single family cannot do for itself. Many useful things can be produced only when a great many people work together. One Indian can make a sled, but more than a hundred men must work together

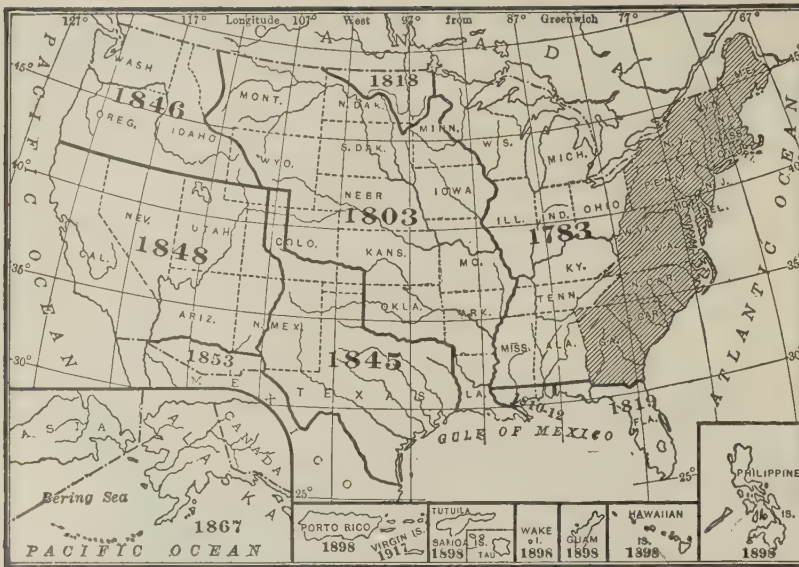


Fig. 62. Map showing how the United States has grown.

to make a locomotive. And it takes thousands of men to build a long railroad such as the Canadians have built across the southern part of their country from Halifax on the Atlantic to Vancouver on the Pacific.

When people say that they are civilized, they usually mean that they have for their use or comfort those things that can be made or carried on only by many people working together—such as postoffices, schools, colleges, hospitals, courts, roads, railroads, and ships large enough to cross the sea. Name all the things you can think of in your neighborhood that would not be there unless many people worked together.

The United States is like southern Canada, a country good for farms, towns, and railroads. In such a country, many people can live, and they learn to do things together. Railroads reach from one end of our country to the other. (See Fig. 133.) There are steamboats on our rivers, and telegrams can be sent to thousands of cities and small towns, and millions of people get mail every day.

In Mexico and Central America, some of the people live as we do, but in some parts of those countries there are native Indians who still live in tribes governed by their chiefs, as do the Indians of the Great North Woods.

QUESTIONS

1. Who attends to the care of the roads and carrying the mail where you live? 2. Why did Henry Hudson and Peary go to the northern seas? 3. After naming the countries of North America, write them on a map of North America which you draw.

4. Of how many kinds of government do you know?

THE UNITED STATES

(INTRODUCTION)

56. Our good country.—When we journeyed across North America from the south to the north, we were in Canada a part of the time. But when we crossed from the east to the west, we were in the United States all the way. We found that the United States is a very large country. It is also a very good country in which to live and to make a living. The people of the United States are fortunate. The climate is good, so that most of the people are strong and healthy and want to do things. That is why the children in American schools play so hard. In some countries it is too hot to play hard running games. In other countries it is so cold that people sit by the fire all winter as the cat does. In some countries the people are not as healthy as they are in the United States, and when people are sick, they are not happy and they do not feel like doing things.

57. The people of the United States.— Besides being fortunate in having a good climate, our country is rich in the materials needed by man for food, clothes, shelter, fire, power, and machines. People from other countries like to come here to live because good wages can be paid in a country so rich in the things which men need. People by the thou-

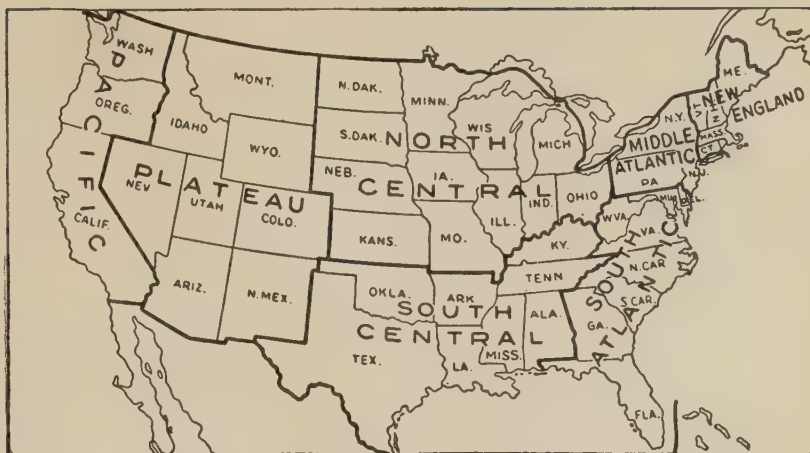


Fig. 63. Map showing the groups of states.

sands have come from nearly all the countries of Europe to live in the United States. Many Canadians also have come to live in the northern part of our country. In the southwest there are many Mexicans, dark-haired like their Spanish ancestors. Near the Pacific coast we find some yellow men from China and Japan. In the South are black men whose forefathers were brought from Africa. No other great nation is made up of people from so many countries.

We have over one hundred million people in this great country of ours, but there is enough land for us all. We feed ourselves and have much food to spare. This surplus we can send to the people in other countries. There is much land in the United States that we do not yet use for crops.

58. The growth of the United States.— The early settlers did not have any steam engines or railroads. They had very few machines of any kind. They came ashore from their sailing ships and found themselves in the edge of a woods, a forest so big that it reached for hundreds of miles. They had to cut down big trees and burn them in order to have any cleared ground for gardens. Even then, these new gardens were so full of stumps and roots that the

settlers could hardly stick shovels into the earth. We should think it very hard indeed if we had to work as they did for a living as poor as the one they had.

As other settlers came and the colonies grew in size, the people spread over the country toward the west. After the colonists won their independence, the nation went on growing; until now the United States occupies the large central part of the continent, as the map (Fig. 51) of North America shows. All this growth took a long time, for the country grew slowly at first. For two hundred years after the first settlement, nearly all of the white people of the United States lived east of the eastern highlands, and the Indians still owned most of the country.

The map (Fig. 62) shows how our country has grown by getting one great piece of land after another. To-day the United States is one of the largest countries of the world. In addition to our forty-eight states, we own Alaska and many islands (Sec. 256), some of which are in the West Indies, some in the South Pacific Ocean, some in the Western Pacific, and some in the Eastern Pacific. You have heard of the Philippines and of the Hawaiian Islands.

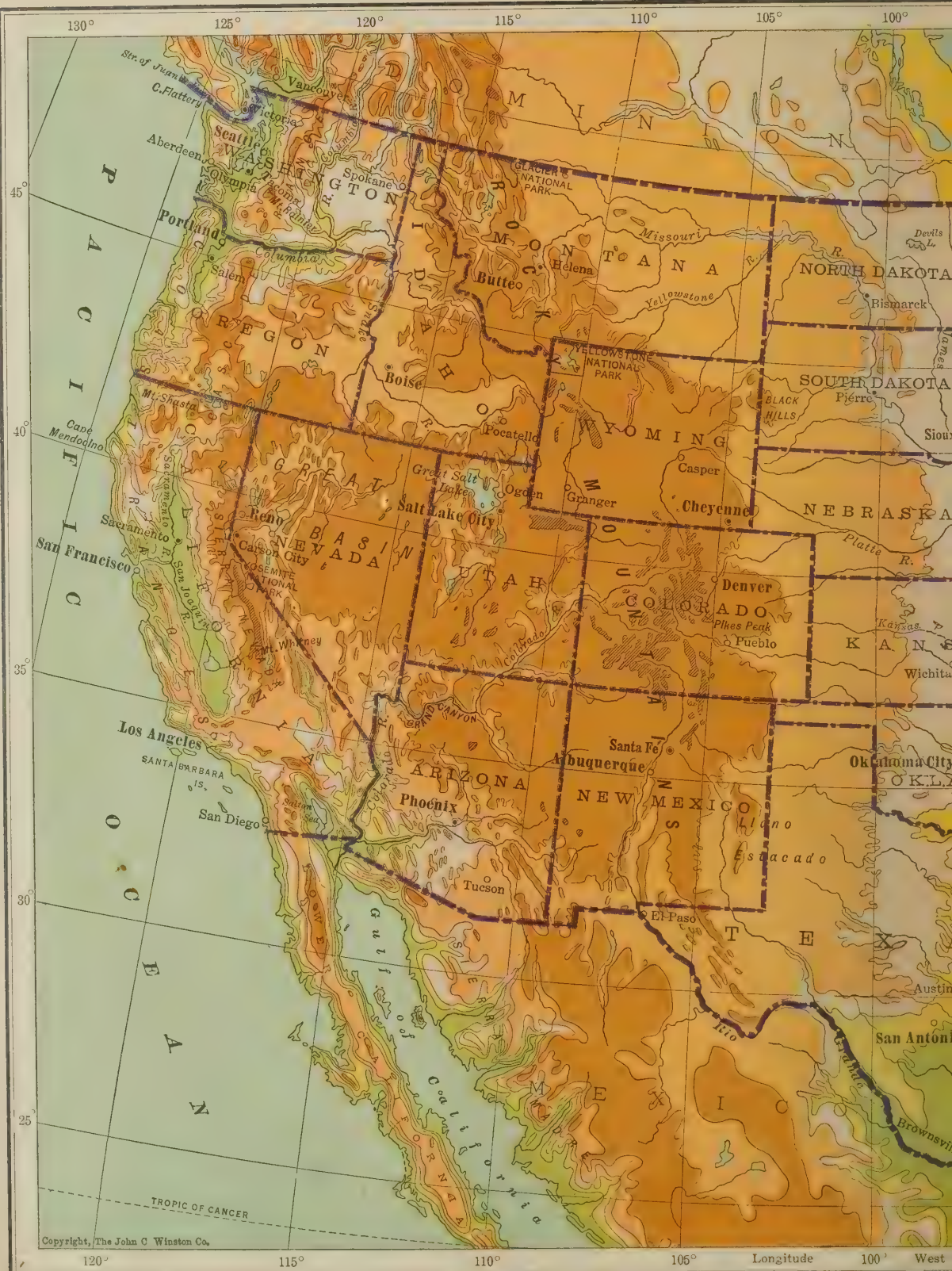


Fig. 64.



Fig. 64

59. Each section of the country helps all the rest.—When the white men first came to America, they worked chiefly at farming, and each family did nearly everything for itself. The women spun yarn, wove cloth, and made the family clothes. The men grew the wheat from which to make the bread and raised the animals to provide the meat. Since we have had railroads and steamboats, we have found that many things can be sent to all parts of the country by trains and boats. The level country of the upper Mississippi valley produces grain and meat. The warmer land of the Southern States produces cotton; the Pacific coast sends out fruit. The mountainous regions produce lumber, coal, and metals. Vegetables are shipped from the level, sandy plain along the Atlantic coast. The people on the seashore catch fish, while the town people make all kinds of manufactured goods in their factories.

Many of our forty-eight states are like the states next to them, but are quite different from states in another part of the country, so we divide them into groups when we talk about them, as we divide pupils of a school into classes. Name the groups of states. (Fig. 63).*

QUESTIONS

1. How many states are there in the United States? How does our flag show this? 2. Give several reasons why people came to America to settle. From these reasons would you think these people would make a great nation? 3. From what countries have many people come?

*There should be drill on these until they are learned.

Where have they settled? 4. Ask some older person to tell you how many of these people, or their children, helped us in the great World War. 5. From what country did your ancestors come here? 6. What have you eaten to-day that came from a distant part of this country?

7. What debt do we owe to the early settlers? 8. What influence and customs came from the mother countries? 9. What is Americaniza-

tion? 10. Give some reasons why the United States is one of the greatest nations.

11. On the map (Fig. 51), measure the length and width of the United States in miles and compare it in size with the other countries in North America. 12. In the reference tables at the back of this book, find the population of Canada; of the United States. 13. Why can Canada never hope to have as large a population as the United States? 14. What brought the black man from Africa to this country?

THE NORTH CENTRAL STATES

CORN AND SOIL

60. The Indians had corn.—When the white men first came to Massachusetts in 1620, the Indians gave them, as a present, some bark baskets filled with a new kind of grain, which was called

maize. The Englishmen called it Indian corn. It kept some of these first settlers of America from starving, for food was scarce that first winter. People have been eating corn bread in the United States ever since. But in some countries of Europe corn is used only to feed farm animals.

When the Indians wanted to grow corn they hunted out a place in the woods where the ground was soft and rich. They cut down the little trees with their stone hatchets, and killed the big trees by making fire



Photo. U. S. Dept. of Agr.

Fig. 65. Indian corn as it grows to-day. Some stalks bear two ears. How many has this one?



Photo. Brown Bros., N. Y.

Fig. 66. An Illinois tractor with gang plows turning furrows in rich, black prairie soil.

around their trunks. Next they punched holes in the soft earth with sharp sticks, and dropped into each hole a few grains of corn.

61. Feeding plants.—If fish were plentiful, the Indians sometimes dropped a fish into the hole with the seed when they planted the corn. This fed the plants, making them grow large and strong.

Did you ever think that plants as well as animals need food? All plants eat. To find food, they send out long, slender roots into the earth. Some things in the earth are good for plants to eat, and the little roots take this plant food out of the earth.

A liquid called sap, which flows through the plant from the little roots, carries the plant food up through the trunks and branches, and out to the leaves and blossoms and fruit. Plants can grow only if they have food and drink.

62. Fertile soil.—If earth has plenty of plant food in it, we say that it is rich, or fertile, soil. If there is little plant food, we say that the soil is poor. You can see the difference between the two kinds if you plant a few seeds in a pot or can of rich garden earth, and some in poor earth from a roadside.

In some places the soil is so fertile that it makes big crops, if we keep the weeds away so that they do not eat up the plant food. In other places the ground is so poor that it is not worth while to plant crops at all, unless the farmer feeds the plants by fertilizing the soil. This can be done in several ways. Sometimes a farmer raises a crop of grass or clover and plows it under for wheat and other crops to eat; or he spreads straw or manure on the



Courtesy of Int. Harvester Co.

Fig. 67. The sharp wheels and sharp teeth of the harrows follow the plow, and break up the lumps of soil to make it fine enough for planting.

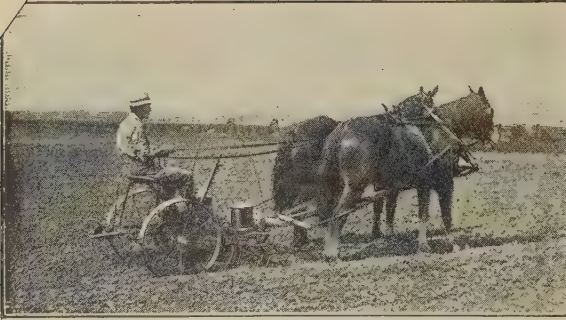


Fig. 68. Relief Map



MEISSNER, WASH. D.C. 1925.

THE NORTH CENTRAL STATES



Courtesy of Int. Harvester Co.

Fig. 69. A corn planter. The seed is in the cans. Buttons on a wire stretched across the field cause the seeder to drop a few kernels in hills in the furrow made by the part of the machine that is in the earth in front of the wheel. This machine thus plants the corn in "hills," which are usually about four feet apart.

ground for fertilizer. It was about the time when men learned how to make railroads that they learned also how to make very rich plant food called commercial fertilizer. This is worked into the soils where the plant roots can find it. One hundred pounds of this kind of fertilizer may make two or three hundred more pounds of wheat than could have grown without it.

After the Indians had planted their corn among the trees, the women pulled up the weeds, letting the corn plants get all the food there was. In four months from planting time, the stalks were higher than a man's head, and the ears were ready to eat.

63. Making corn fields.—It was easier for the first settlers to grow corn than for the Indians, because the white men's axes of sharp steel easily cut down the big trees, so that fields could be planted where forests



Courtesy of R. H. Moulton

Fig. 70. Cultivating corn on a farm in Illinois. Two little plows in each furrow loosen the soil and uproot the weeds.

had stood. The poor Indian had to plant his corn with a sharp stick, but the white man uses plows and harrows. (Figs. 66 and 67.) These turn the soil over and make it soft and fine, so that the corn roots can grow through it easily.



Photo Immigration Dept., So. Dak.

Fig. 71. 5000 bushels of corn piled up on a farm near Yankton, South Dakota. See the barns and the windmill and the tank for watering stock.

64. Corn land and corn weather.—Corn likes many showers, and much sunshine too. If you will look at the corn map (Fig. 79) and the rainfall map (Fig. 88), you will see that corn does not grow where there is little rain. Moreover, to grow corn easily we need rich, level ground. That is why Illinois and Iowa grow more corn than any other three states. These two corn states are for the most part one wide stretch of level, fertile land, so level that you can cross both states and never see anything that even looks like a mountain. They have plenty of rain and warm summer weather, both of which are so good for corn.

65. Corn growing.—The full grown corn plant needs so much room that in our corn fields the rows of plants are about four feet apart. Weeds come crowding up between the rows while the corn plants are small. To keep these weeds from shading the corn and getting all its food and moisture, the farmer runs a plow or cultivator between the rows three or four times, while the corn stalks are still small. (Fig. 70.) This way of killing the weeds is much easier than pulling them out by hand as the Indians did. A farmer with two horses in level Illinois can grow fifty times as much corn as an Indian family could by hand work among the dead trees in the woods. This is one reason why we live better than the Indians did.

66. Boys' corn clubs.—In many parts of this country, the United States government helps people to organize boys' corn clubs. Each boy who joins a corn club must grow an acre of corn as directed by the instructor of the club. The object of these clubs is to produce more corn by showing the people the best way to grow it. The boys often succeed in raising more per acre than their fathers do. In South



Courtesy of R. H. Moulton

Fig. 72. A teacher showing how to make a "rag doll" seed corn tester. See in the next figure how the grains have sprouted.



Courtesy of R. H. Moulton

Fig. 73. Sample grains have been taken from each ear and rolled up in a moist cloth (rag doll tester) to sprout. Notice the sprouted seeds and the twelve ears of corn from which they were taken. Which ear would you use for seed?

Carolina, a boy named Jerry Moore grew over two hundred bushels of corn on his corn club acre. How much would 200 bushels of corn cost near your school?

67. Harvesting and shipping corn.—In the autumn each ear of corn must be taken out of the husks that protect it. This is usually done by hand. Next the corn is hauled to the barn. If the corn is to go to market, the ears are put into a shelling machine that twists the grains off the cob. The shelled corn takes up less space than the ears would take in the corn trains that carry the grain from the farming districts to the great corn markets at Omaha, Kansas City, St. Louis, Chicago, and Cincinnati. (See Fig. 79.) From these cities, some of this grain goes on to the people in

Europe, to whom we send many ships loads each year. The corn map shows the leading seaport cities from which most of the corn ships sail. (Fig. 79.)

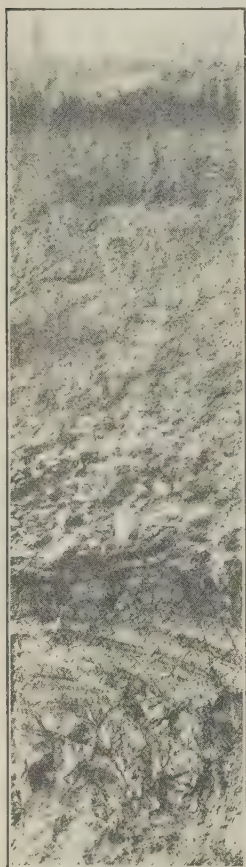


Photo. U. S. Geol. Survey
Fig. 74. A photograph taken of the side of a railroad cut in Washington, D. C. Compare this with the other picture on this page.

Take a piece of paper and measure the scale of miles on the map (Fig. 51); then measure the distance from Omaha to Chicago, and on to New York. How far is it? Much travel would be saved if corn could grow in great quantities near the Atlantic coast; but the corn map (Fig. 79) shows that instead of being grown near the cities where the ships are, most of the corn is grown in the North Central States, because the land there is better for farming than it is near the Atlantic coast.

68. Smooth land or rough land.—If you should take a trip from Iowa to New England, you would know from looking at the ground why one of these regions

is better than the other for growing corn. The land in Iowa is smooth, level, free from stones and easy to plow. Most of New England is hilly, and sometimes the earth is so full of stones that it is hard to find a place to stick a plow into the ground. This difference shows you why Iowa and the other Central States are so much better for farming than the New England and Middle Atlantic States.

69. How soil is made: decaying rocks make soil.—What is soil, anyhow? It is only rock, broken up into very small pieces. It seems strange to think that hard rock can become soft dirt. But you have seen many things change their form. You have seen a piece of wood so soft and rotten that you could break it up in your fingers; yet you know that it was once so hard that men drove nails into it.

The hardest of things decay, or break up into many tiny pieces. The sharp knife, or the hard steel chisel that cuts stone, will at last be soft brown rust. You can see a bright new nail or a tack begin to decay in a day or two. Wet it, and the next day it is rusty. You can scrape off the rust with a knife. That rust is a decayed part of the nail. Many boards fall off from fences because the nails which hold them have rusted in two. In just this same way rocks decay, only very slowly. The rain-water takes out the part of the rock that holds the grains together. If you look at the walls of an old building, you can see that some of the stone has decayed. Sometimes you cannot read the letters on old

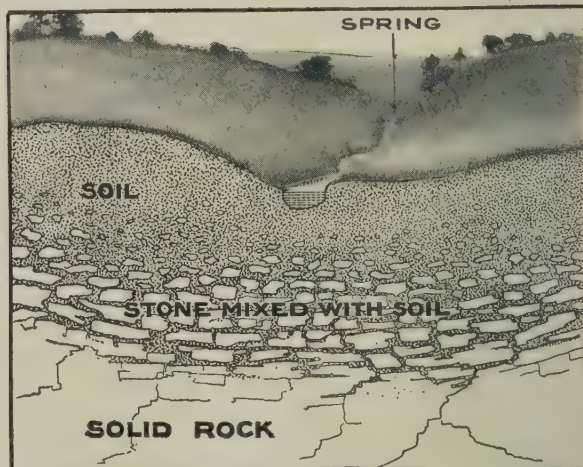


Fig. 75. A diagram showing how soil may be made. Have you seen something like the picture in the railroad cut or elsewhere? The spring is the source of a little stream. See also Fig. 74.

gravestones, because so many particles have dropped to the ground. These particles of decayed stone make soil, in which the flowers, grass, grain, and trees grow.

70. Roots break rocks.—Another thing that helps to make soil is that all rocks have little narrow cracks in them. Sometimes you can see them, like very fine lines. Into these tiny cracks plant roots push themselves and grow with such force that they widen the cracks a little, and finally break the rocks apart. Every tree has thousands of little roots that are constantly prying into every rock crevice within reach. Sometimes tree trunks and roots break off a big, solid chunk of stone by growing into cracks in the rock. As time goes on the rocks are thus broken into smaller and smaller pieces until soil is formed.

71. Frost breaks rocks.—In cold weather, the water freezes in the cracks of rocks and breaks them open. Freezing water has force enough to burst pitchers, bottles, and even iron pipes. Perhaps you have seen such a thing happen. The rocks broken by the force of the freezing water will, in course of time, become soil.

72. Top soil and under soil.—You see the rocks have many enemies that are



Photo, Immigration Dept., So. Dak.

Fig. 76. 8000 bushels of corn on a prairie farm. The farmer will fatten his pigs on some of this corn, and sell them to the packing plants in the cities.



Photo. Brown Bros., N. Y.

Fig. 77. How the New York State cornfields look when an unusually early snow falls among the shocks and the pumpkins that grew with the corn.

always attacking them and slowly turning them into the earth that is needed for growing food. We find that this earth is finest near the top, because the roots, the frost, and the rain work most near the surface of the earth. Sometimes you can see the several kinds of soil in a cut beside a road or in a place where a cellar is being dug. Beneath the fine top soil comes a coarser under layer; next are the small pieces of

A 7½a	C 25a	D 40a	E 40a
HOUSE ORCHARD LOTS	PASTURE	CORN	OATS
B 7½a			
PASTURE			
F 40a	G 40a	H 40a	
GRASS	CORN	CORN	

Fig. 78. A map, or plan, of the way the Corn Belt farmer often lays out his farm.

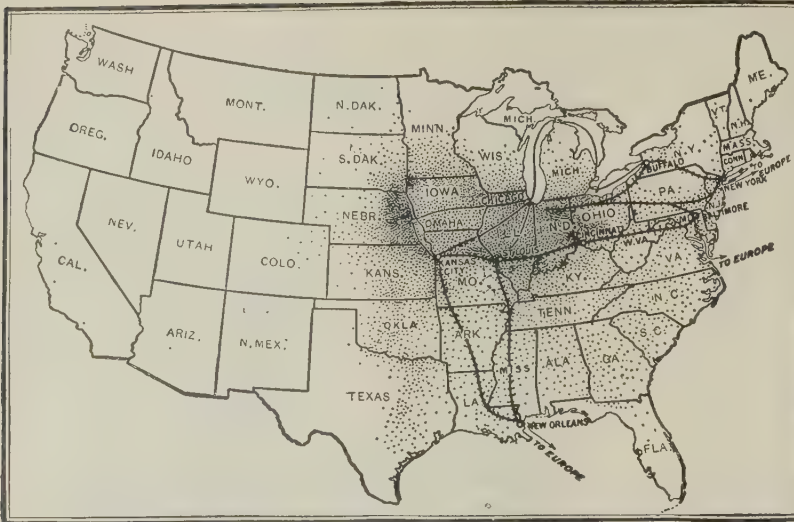


Fig. 79. Map of the United States, showing regions of corn production and centers of shipment. Compare with Fig. 80, world map of corn production.

stone, mixed with earth, then larger stones, and finally the solid rock with cracks in it (Figs. 74, 75.) All of the soil you ever saw was once hard rock.

In mountains and hilly countries such as New England and the Appalachian Mountains, the running water often carries the little soil particles away almost as fast as they are formed. Only a thin layer of soil is left on the hills, but the water carries the earth into the valleys, which often have fine deep soil. In the North Central States most of the land is so level that the soil is not carried away. The rock is far down below a thick layer of soft, fine earth. All this is good for the corn grower.

73. Other crops on the corn farm.—The farmer who grows corn in the Central States grows other crops also. He has horses to help him work, and often he has cattle and pigs as well. He has a pasture field where his animals may eat grass in summer, and another field that grows hay (Fig. 78). Hay is grass that has been cut and dried in the sunshine. It is then put into big stacks, or into barns, so that it will keep for winter use. Nearly always

there are barns and other buildings near a farmer's house.

74. Other places grow corn.—Let us leave the North Central States and see where else corn grows. Remember, corn likes rich soil, showers, sunshine and warm weather. On the corn map (Fig. 79) you will notice that the states in the south and east grow corn, but less than is grown in the Central States.

The world corn map (Fig. 80) shows that there is a corn region in South America and one in Europe. But both together are not nearly as large as the one in the United States. What South American country grows corn?

The only European country that has much corn to export is Rumania (Fig. 315). Steamships from England and Italy go up the Danube river and bring away loads of Rumanian corn. Can you name and point out ports to which they might take the corn (Fig. 315), and the bodies of water through which they might sail?

The Rumanian corn grower has a hard time, for corn does not grow as well in his country as in ours. One year the Rumanians may have a good crop. The next year may be so dry that the Rumanian corn grower gets but a quarter of a crop. That year he has but little money. If farmers have no money to spend, they cannot buy things from the stores and factories, and therefore business is poor in the cities. In the North Central States, with their many summer showers, the corn growers have more corn and more money than they do

in Rumania. Do you see why many Rumanians want to come to the United States to live?

QUESTIONS

1. What do you eat that is made of corn? 2. What kind of kernels would you plant to raise good corn? 3. What makes corn grow well? 4. Why can the farmer who plants corn in Iowa (Fig. 99) raise a large crop? 5. Why must he plant corn carefully if he wants to weed it with a cultivator? 6. Bring to school a piece of rock either very soft or very hard. Test it with your knife. 7. How do you know that rocks are broken up or carried away?

8. Find a picture in this book showing rocky country. Are the rocks wearing away? 9. What farm buildings do you find in the picture (Fig. 71)? Notice the windmill that pumps water for the farm. 10. Write a short story called "A Day on a Farm." 11. Why is a single corn plant pretty? Draw one. 12. Make a list of the seaports from which corn ships sail, and opposite each port write the name of the state it is in and the body of water into which the ship sails. 13. Point out all the states that grow corn. Which two are the best? 14. In what direction do you live from the leading corn producing states? Does your state produce as much? If not, why?

15. Find Argentina on the map of South America. On what river is Buenos Aires? 16. In what direction will the corn ship sail from Buenos Aires to London? In what hemisphere will it be as soon as it crosses the equator? 17. Through what waters will the corn ship sail from Rumania to London? 18. If you do not live in the North Central States, trace on the map (Fig. 79) the route traveled by the corn you use. How far does it travel? How long does it take?

WHEAT

75. How wheat is grown.—Nearly all of us eat bread. Did your father grow the grain to make the bread you eat, or did your mother buy the flour, or did she buy the loaf already made? Most people in this



Fig. 80. Map of the world showing where corn is grown, and also the trade paths or routes on which it is carried. (See Sec. 74.)

country use wheat flour. Where do they get it?

In the western part of the North Central States (Fig. 99), that is, in Minnesota, North Dakota, South Dakota, Kansas, and Nebraska, people are busy growing wheat. Sometimes the fields are covered with nothing but wheat as far as one can see. The wheat-grower's farm is often a large one—so large that it might take you several hours or even a day to walk around it.

If wheat is to grow well, the ground must first be plowed to turn the weeds and grass under the earth, so that they cannot choke the little green wheat plants. For ages men have used horses, mules, and oxen to pull the plows around and around the field; but now in some places people use tractors—big machines run by engines. These pull the plows and the harrows. A bright boy or girl can sometimes run a tractor, which has the strength of twenty horses, and plows up several acres a day.

In the wheat states, the ground is so level, treeless, and free from stones that some farmers use gang plows, so-called because they make three or more furrows at a time. (See Fig. 66.) After the plow comes the harrow, which makes the soil



Courtesy of Int. Harvester Co.

Fig. 81. Wheat drills. They sow a row of wheat from each spout that comes down from the seed boxes. When the wheat plants first come up, they make long green lines across the field.

soft and fine, and ready for the big seeding machine, or drill, as it is called, which can plant many acres in a day. (Fig. 81.) The wheat is planted in rows close together, so that when the plants come up, the field is as green as a field of grass. In fact, the wheat plants are so close together that, unlike corn, they do not need to be cultivated between planting time and harvest time five to eight months later.

76. Harvesting wheat.—Harvest time is the busiest time of the year on the wheat

station go the wagons loaded with sacks of wheat.

77. The wheat markets.—In a few days, the freight trains have carried the wheat to the great wheat markets—Kansas City, St. Louis, Omaha, Minneapolis, Duluth, Chicago. (See Fig.

farm. (See Fig. 83.) From Chicago, and from other cities and towns, men go out by trainloads to help the farmers harvest the wheat. The boys and girls often help too. Everybody works long hours, for the grain must be harvested before the wheat grains dry and fall to the ground. (Fig. 83.) After the wheat is cut, the big threshing machine beats the grain out of the heads, runs it into sacks, and blows the straw out into big piles. (Fig. 86.) Then, away to the railroad

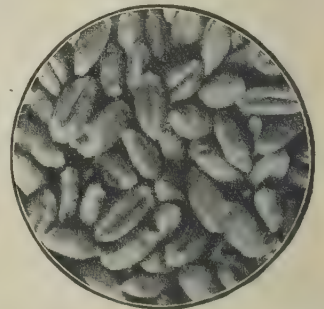


Fig. 82. Grains of wheat, actual size.



Courtesy of Int. Harvester Co.

Fig. 83. Two binders cutting wheat. Often these machines are drawn by horses. Is the country hilly or level?



Fig. 84. Heads of smooth and of bearded wheat.

Photo. U. S. Dept. Agr.

64.) From Chicago and Duluth, steamships carry part of the grain to Buffalo. It goes from here to New York through the New York Barge Canal (Figs. 210 and 198) and to Montreal through the Welland canal. (See Fig. 198.) Some of the wheat is hauled by train to New York, Montreal, and even to Boston. Other trains carry some of it southward from Kansas City and St. Louis to Galveston and New Orleans. You can think of streams of wheat from the farms flowing along the railroads and the rivers to our seaport cities, where it slides into the great bodies of ocean steamers to be taken to our cousins in Europe.

There are many people in Kansas, Minnesota, Dakota,

and Canada whose only crop is wheat. When the season is favorable, and the yield is large, they can sell their wheat and use the money to buy many other things that they need. In having only one thing to sell they are like the fisherman (Sec. 14), who has plenty of fish to sell; and they are much better off than the fur-hunting Indian (Sec. 7), who has no railroad to bring him things which he needs, no matter how many furs he may have.

78. The Red River Valley.—One of America's most famous wheat districts is the level valley of the Red River of the North, in Dakota and Minnesota. The winters there are very cold. Sometimes the thermometer is below zero for days at a time, and people go about in sleighs for many weeks. A big wagon body is often



Fig. 85. Stalks of wheat cut and tied together by hand. Compare with Fig. 84.

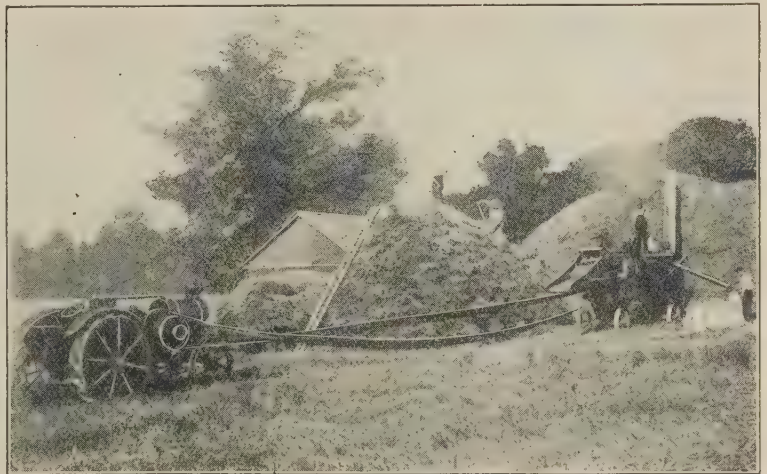


Fig. 86. A stack of wheat sheaves and a threshing machine. The thresher separates the grain from the straw and delivers it from a spout into the sacks.

Courtesy of Int. Harvester Co.



Fig. 87. Map of the United States showing by black dots where wheat and rice are grown. The more dots, the more grain. The dotted line separates the rice from the wheat region. See how small the rice region is.

sota wheat country and go into Canada without knowing that he had left the United States, unless he happened to see a boundary stone. This is because the wheat farms of the two countries are so much alike. The Canadian farmers raise wheat just as it is raised in Dakota and Kansas, and the people speak English as we do. The chief wheat city of Canada is Winnipeg. (See Fig. 243.) Long wheat trains carry the Canadian

put on runners and goes about the country like a street car, taking boys and girls from many farms to the high school in a country town. There are not many people in the towns in these regions. The wheat farmers of the North Central States have little to do in the winter; so many of them go off to the forests to cut lumber, while others who stay at home keep cows, feed them, milk them, and make butter to send away to the cities. Thus, you see, some of the wheat growers do more than just one thing, and they have a variety of goods to sell. But after all, wheat is the big crop from which they make the most money

The wheat region that begins in the North Central States extends far into Canada. One could ride along a level road in the North Dakota or Minne-

wheat from this city to the steamers at Fort William on Lake Superior. A great deal of Canadian wheat goes to England.

79. Other wheat districts of the United States.—The wheat map (Fig. 87) shows another wheat district in the northwestern part of the country, in the state of Washington. Only about one-fourth of the



Fig. 88. Map showing the average annual rainfall in the different parts of the United States. How many inches a year fall where you live? In what season does most of it fall? How many inches fall in Minnesota?

states in our country grow enough wheat for their own people to eat. For this reason, wheat and flour must be shipped all over the country from the few states that have wheat to spare. Thus, you see that the people in one part of the country must have the help of the people in other parts of the country in order to have what they need. We all depend on one another.

Look at the mark on a flour sack at your home, or at your grocery, and see where the flour was made. Nearly every city has flour mills; but Minneapolis, on the edge of the wheat belt, is the greatest flour making city in the United States. Do you know where there is a flour mill near your home?

80. Machines and bread.—Not very long ago, men did the work of harvesting wheat with hand tools, like scythes and rakes. (See Fig. 395.) Now machines plant the wheat, harvest it, thresh it, grind it, and even make it into bread. In the big bakeries, bread-making machinery mixes



Fig. 89. Map showing the average annual rainfall in the different parts of the world. Point out where the most rain falls in South America; in Africa.

the dough, and carries it through the floors of the building from story to story until it reaches the ovens in the basement. (See Figs. 91, 92, 93.)

81. Wheat and machinery in foreign countries.—The Americans have invented most of the wheat machinery; and we are sending plows, harrows, reapers, threshers, and tractors to other countries, thus making it easier for people in those lands to grow their wheat. In Russia, however, and in some of the countries around the Mediterranean Sea, the people still thresh some of their wheat by making animals walk around and around and tramp it out.

They then take it up in a shovel when the wind is blowing, and the wheat and fine straw are thrown up in the air. As the straw is lighter than the grain, the wind carries the straw away, while the heavier grain falls back on the threshing floor. They call this winnowing in the wind. This method is mentioned in the Bible, and men have threshed



Fig. 90. World map showing where wheat is grown. Does this crop grow in places where there is very heavy, medium, or light rainfall?



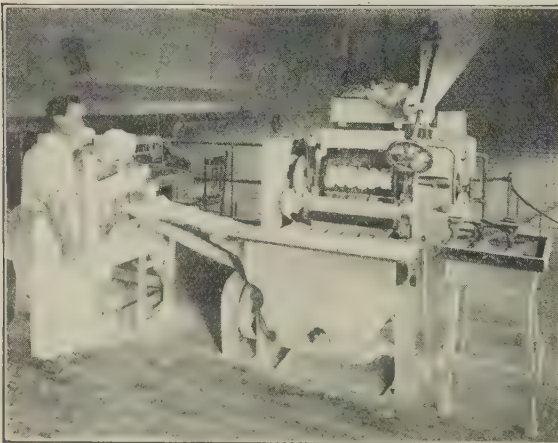
Courtesy of American Stores Co., Phila., Pa.

Fig. 91. Bread mixing machines and the troughs in which the dough "rises" before being dumped into a chute. (See next figure.)

and cleaned their wheat in this way for thousands of years.

The farmers of Australia and Argentina use the very best of American machinery and grow their wheat as we do in the North Central States. We have also shipped our harvesting machinery to Russia and to Asia.

Some countries cannot use good machinery in their wheat fields because the fields are small, steep, and stony. In Italy and Greece, there are so many people, and good



Courtesy of American Stores Co., Phila., Pa.

Fig. 92. A chute full of dough which the machine is cutting into loaves. These pass to the left on a belt conveyor.

land is so scarce that the farmers sometimes have little mountain-side wheat fields no bigger than a room. These fields are so very rocky that they must be dug by hand with spades and forks, and the wheat carried down by hand. It takes much hard work to grow a little wheat in such a place, and many of these people have come to the United States where there is more land.

Wheat grows well in level countries where there is a cool winter and a moderate amount of rainfall. Look at the map of



Courtesy of American Stores Co., Phila., Pa.

Fig. 93. Baked loaves of bread on wheeled racks. The bread has just been taken from the long row of ovens at the left. It is now ready to be wrapped and sold.

the United States rainfall (Fig. 88) and the map of United States wheat (Fig. 87) production. You see that most of the wheat is grown where the rainfall is light. Every continent has a region of heavy rainfall where there is no wheat, and a region of light rainfall where wheat is grown.

82. Wheat in Europe.—All the countries of Europe together grow more wheat than America, but in spite of this Europe does not grow enough wheat for its many people. There are about four times as many people in Europe as in the United States, and they all like to eat wheat bread. But many

people in Europe can afford to eat wheat bread only on holidays and great occasions. The rest of the time they have to eat dark bread of rye, oats, barley, or corn, because wheat is so scarce.

Europe has one big country that has long grown much wheat for export. This country, Russia, has a cold winter. It has wide level plains, like Dakota and Minnesota. It has a great wheat port away off in southeastern Europe on the Black Sea. (Fig. 315.) Perhaps you can name a city that a wheat ship would pass on its way from the Black Sea to Belgium or to England.

QUESTIONS

1. Is it easy to plow in your part of the country? Why? 2. Look at Figs. 66, 67, 81; how many men does it take to run the plow? the harrow? the drill? 3. How many horses are pulling the harvester (Fig. 151) in eastern Washington? 4. On which side of the machine is the wheat cut? Where is it sacked? 5. Through what is the grain flowing from the elevator into the ship (Fig. 110)? Where is Port Arthur? Through what waters does the ship pass from Port Arthur to London? 6. With the map of the United States open, fill out the following chart. Copy the headings carefully.

*With a Wheat Ship in the Great Lakes.
Duluth and Port Arthur to Buffalo and Montreal.*

LAKES AND RIVERS PASSED THROUGH	CITIES PASSED

7. List some things eaten by the Indians of the North Woods, the Eskimos, the people in

your school. Why do they differ? 8. Examine the world wheat map (Fig. 90). Name three American cities and three others outside of America that export wheat to Europe. 9. Find on the map the five chief wheat states of the North Central States named in Sec. 75. 10. What has made it easier to build railroads through these wheat states than through the eastern part of the United States? See map, Fig. 64. On Figure 64 trace the journey of a bushel of wheat from North Dakota to Duluth, to Buffalo, to New York City. Name the states and waterways on which the grain would travel.

12. What river forms a natural boundary of Nebraska? of Wisconsin? 13. Through which of these states does the Missouri River flow? 14. What large city in one of these states is on Lake Superior? 15. What river flows through the wheat country of eastern Washington? Into what ocean does it flow? 16. When are more men needed to care for the wheat crop, at planting, or at harvesting time?

CATTLE AND HOGS

83. Where these animals live.—If you go to the grocery

store and read the label on a can of tongue or ham or beef, you will usually find that it came from some place in the North Central States. Perhaps the label says Chicago; it may say Cincinnati, Kansas City, Omaha, or South St. Paul. In all of these cities there are large factories where meat animals are killed and prepared for the butcher shop or canned ready for the table. Let us see why these industries are located in these cities.

84. Pigs and corn.—You recall that the wheat farmer sells most of his wheat. The



Photo. Brown Bros., N. Y.

Fig. 94. Little pigs sleeping by their mother; calves, hay stacks and feeding racks, Caldwell, Idaho. How many little pigs are there?



Fig. 95. A herd of cattle pasturing on the Great Plains.

corn farmer has a different plan. Instead of selling his corn, he feeds most of it to the cattle and pigs; and when they are fat, he sells them to the meat packers in the cities. Look at the swine map (Fig. 100) and the corn map (Fig. 79) and you will see that the pigs live in the corn states where they can be fattened on the corn that grows there. The corn farmer often buys lean cattle from the states farther west and southwest, fattens them on his corn (See Fig. 76) and hay and grass, and then sends them away in freight cars to Chicago or Kansas City, to be sold.

85. The pig club.—Many American school boys belong to pig clubs. Each member of the club raises a pig as directed by the teacher of agriculture in his school, or by the county demonstration agent—a man hired by the Government to help the farmers to learn the best way to do their work. A farmer boy in Pennsylvania paid \$9.00 for a pig that weighed 47 pounds. In 147 days the pig weighed 302 pounds, had eaten \$30.00 worth of feed, and was sold for \$59.02.

86. Shipping meat.—In a city butcher shop, you may see a little round purple mark on a quarter of beef or on a carcass of mutton. This is the stamp of the United States Government inspector, who puts it there to show that the animal is healthy and good to eat. If you live in Boston, New York, Philadelphia, Pittsburgh, or in one of many other Eastern cities, you will probably find that the meat came from Chicago.

In the big meat-packing plants, not a scrap or a drop of anything is wasted. Even the blood is made into chicken



Photo. U. S. Dept. Agr.

Fig. 96. These boys are members of a pig club in Kansas. They are judging which pig will receive first prize.

feed and fertilizer. Small pieces of bone, such as we throw away at home, are made into buttons, and the bone shavings are made into bone dust for fertilizer. Grease that is not clean enough to eat is made into soap, and meat that is not fit for man to eat is made into chicken feed. Altogether, several hundred different products are made from one pig or ox. Cars called refrigerator cars, with a closet full of ice at each end, carry fresh meat from Chicago and Kansas City all the way to New York and Boston, even in hot weather. At these cities, some of the meat is regularly put on steamships and sent to Europe.

87. Meat from distant places.—If you should go into a grocery store in England, France, or Holland and look at the labels on the cans of meat, you would find them, even there, marked “Chicago”, “Omaha”, and “Cincinnati”. But there would also be others marked with names of places in Australia, Argentina, and Uruguay.

In Europe, not enough meat is produced for all the many people. Meat is brought to them in ships from other continents where there are not so many people to eat the meat which those countries produce. Australia does not have very many



Courtesy of Board of Trade, Amarillo, Texas

Fig. 98. Cattle feeding troughs. Great Plains, Amarillo, Texas.

cattle, but since it is a large country, with fewer people than Belgium, there is beef to spare. Many shiploads of beef go from Sydney, and also from Wellington, New Zealand, to London and other English cities. That is a very long journey. If you look at the globe you will see that it is half way around the world. The ship must go through the hottest part of the world, too; therefore, the meat is frozen hard before it is put into the refrigerating rooms in the great ships.

The people of western Europe now get more beef from South America than they do from the United States. Three countries of South America—Argentina, Uruguay, and Paraguay—are together nearly half as large as the United States. These countries have wide, treeless plains covered with sweet grass which is good for cattle to eat.

Most of Europe, you remember, is too cool or dry to grow its own corn. In place of corn, the farmers of these countries grow oats, barley, and beets for their cattle. These beets are almost as big as your head. (Fig. 328.) It takes a lot of work to grow beets, but great fields of them are grown for the cows and sheep of Europe to eat.



Photo. U. S. Dept. Agr.

Fig. 97. A cold-storage room in a Chicago meat packing plant. Hundreds of sheep carcasses may be seen any day in this immense room. The air is always very cold, so that the meat does not spoil.

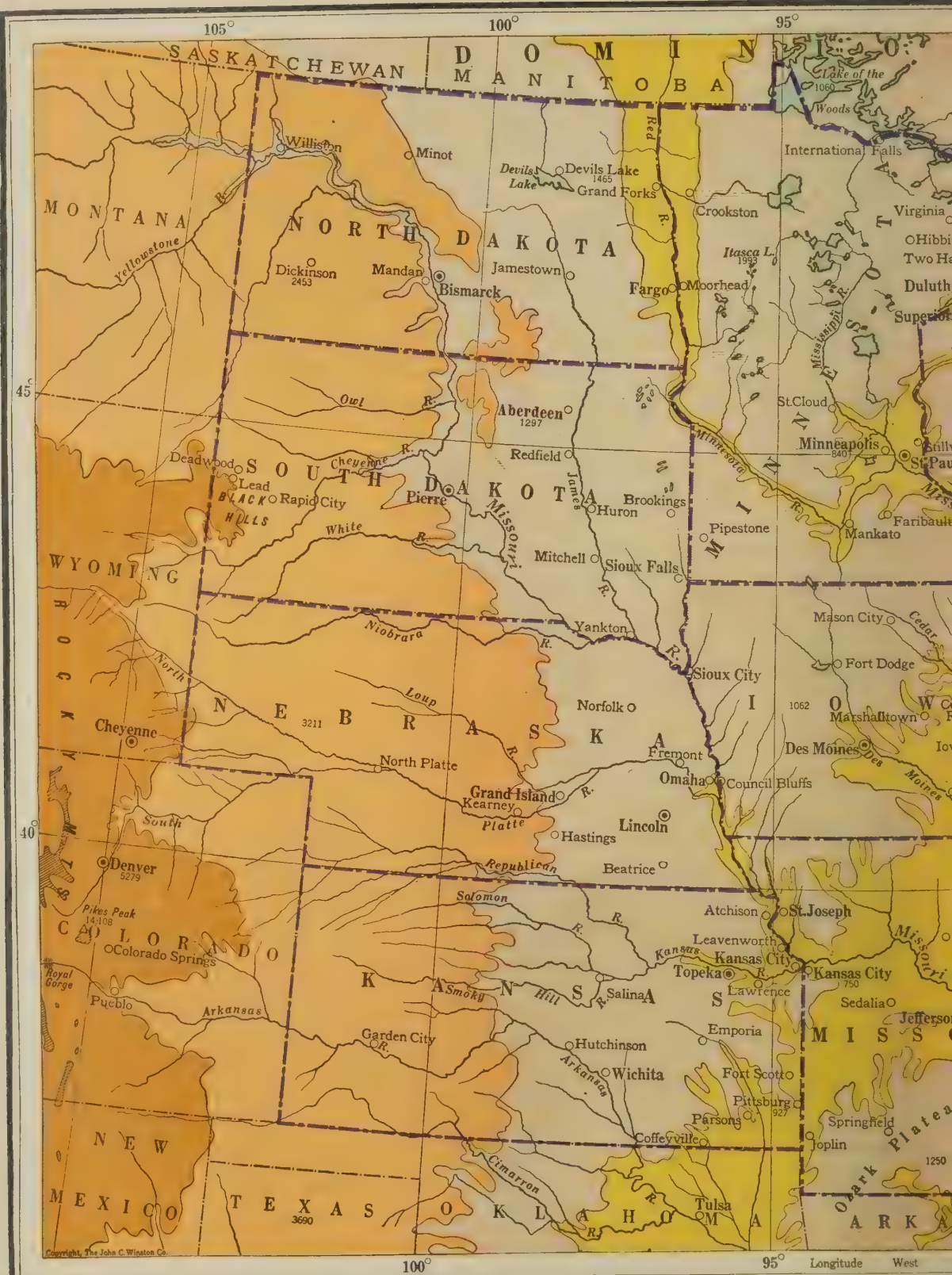


Fig. 99.

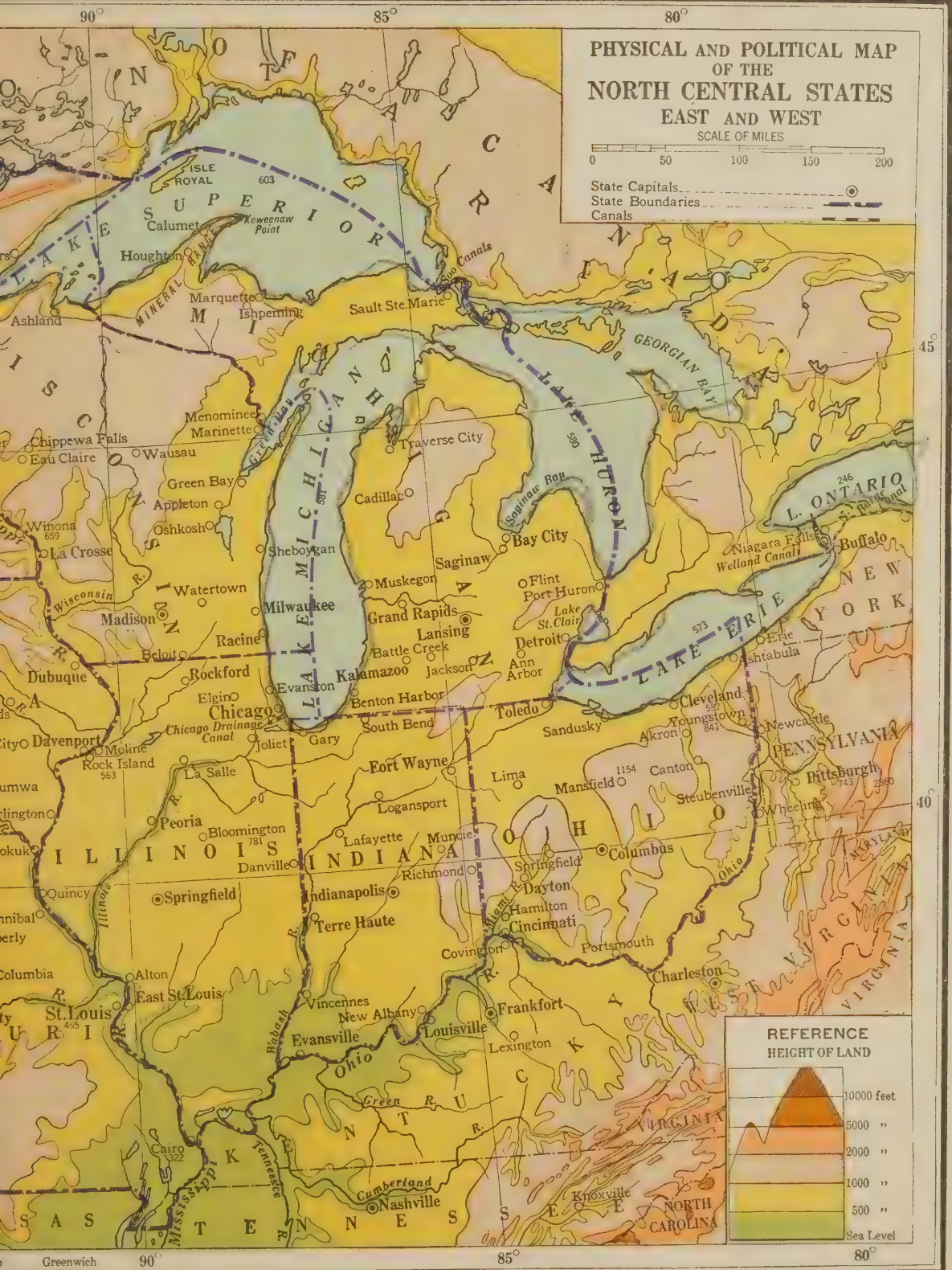


Fig. 99.

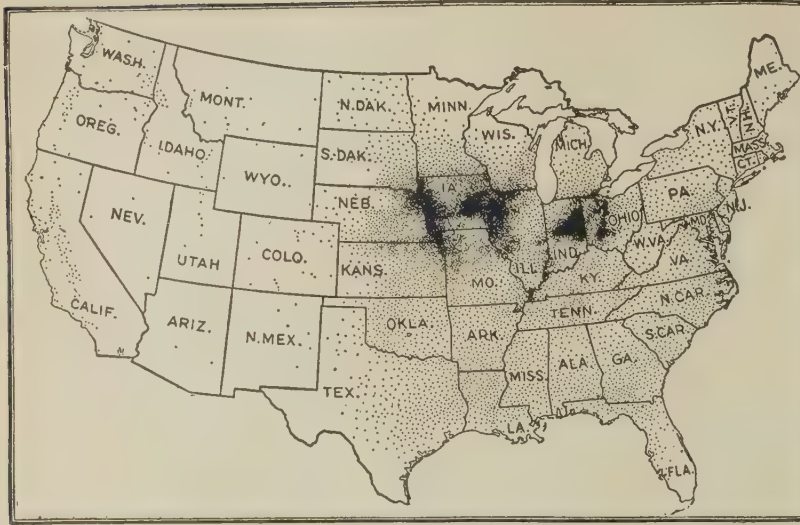


Fig. 100. Map of the United States showing where hogs are raised. Each dot stands for 5000 head. In which part of Illinois are most pigs raised? Of Nebraska?

88. Pigs and potatoes.—While the sheep and cows of Europe are often fed on beets instead of on corn, many of the pigs there are fed on potatoes. Pigs and potatoes are often grown in the same places. The potatoes are of a large, coarse variety, and are raised especially for the pigs and cows. For this reason Germany grows several times as many potatoes as does the United States. Russia is another country that grows many potatoes.

89. Pigs and nuts.—When we studied corn (Sec. 64) we found that corn does not grow where there is little rain. Southern Europe is too dry for corn to grow as well as it does in the United States. These countries of Southern Europe—Spain, Italy and Greece—are also too dry for potatoes to grow well. These countries do not have as many pigs as the Germans and Belgians have. You can hardly guess what food fattens the pigs of South Europe. Often it is chestnuts and acorns. These are the foods of the wild hog in his forest home. It is a common sight in Spain, Portugal, or Serbia to see

the swineherd watching his drove of fat pigs out under the trees while they gather the crop and fatten themselves. In France and Italy, after the people have picked up the best of the chestnuts for their own use, the pigs gather what are left.

But with all their strange ways of feeding pigs and cattle, the people of Western Europe have been unable to supply themselves with enough meat. For many years,

the United States, South America, and Australia have helped supply them. Every week we send to them from Chicago and Kansas City and from other cities, carloads of pork, beef, ham, and bacon. All this brings much money to the farmers and city people of the North Central States. Thus we see that this North Central section of our country supplies both bread (Sec. 80) and meat, not only to America, but also to countries across the sea. In return, almost every country in the world sends back something which is needed there.

90. Countries where meat is scarce.—Can you guess why the people of Italy eat less meat than the people of Illinois? And why the people of China eat less meat than the people of Italy? It is because the people of Illinois have farms of a hundred acres or more, while the farmers in Italy have but ten or fifteen acres, and the Chinese have only one or two acres in their little farms. Yet each one of the little farms in Italy and China must be made to support a family. Now, the Chinese farmer cannot raise enough crops on his tiny bit

of ground to feed himself, his family, and also a number of pigs and cattle; so he does not keep many pigs and cattle. He raises rice, corn, beans, potatoes, and vegetables for his family, keeps a few ducks and chickens, and often has only one pig to eat up scraps that people do not eat. So the Chinese do not have much meat to eat. You see, then, that the meat industry is not as important in their country as it is in the North Central States. The Chinese farmer does not have any tractor. Often he does not even have a horse to pull his plow. Instead, he must dig up his little farm with a spade. He cannot produce enough to get high wages. Do you see why many Chinese want to come to America to live, and why so many Italians come to America?

QUESTIONS

1. How many boys of the pig club (Fig. 96) are wearing ribbons or badges? What may they have taken prizes for? 2. Why is it good for our country to have boys taught to be good farmers? 3. To what animals besides the pigs does the farmer in Figure 76 probably feed his corn? 4. Where in Nebraska are there wide stretches of plain like those in the picture (Fig. 52)? Did you ever see such level land? Where? What makes you sure that this is a rather dry country? 5. In which part of Texas are there the same level plains? (See the map of the United States.)

6. How does a railroad strike prove that city people cannot get along without ranchmen? 7. How did the World War show that each country needs the others? 8. What danger did people run before the Government put its stamp on meat?

9. What farm machines does the Illinois farmer have that the Chinese do not? 10. Could the Chinese farmer give you milk, butter, cheese, or roast beef? 11. Trace on the map (Fig. 40) a route to China. What is another



Photo. Brown Bros., N. Y.

Fig. 101. Wisconsin lumbermen and their camp. See the snowshoes. How deep is the snow? What kind of trees are to be seen?

way? Which is nearer? 12. Find Sydney and Montevideo on the political map of the world (Fig. 40). From which place is it a longer journey to London by ship? Through what waters would the ship from Sydney pass?

LUMBER

91. Land fit only for forests.—The country near the upper Great Lakes is not as good for farming as that of the southern and western part of the North Central States. It is hilly; parts of it are very rocky, and in spots it is sandy and swampy—very different from the smooth, level fields of the corn country and the wheat country. If the trees are cut down, the ground cannot easily be made into fields. Therefore, most of the land is still in forests of pine, spruce, hemlock, and maple.

92. The camp and the chopping.—Every winter hundreds of men from the wheat country and from the corn country go into these forests of the Great Lake region to cut down trees. They take with them teams of horses, and provisions to last the whole winter—sacks of flour and boxes and barrels of groceries for themselves; and for their horses, bales of hay and sacks of oats and corn. When they get to the forest,



Fig. 102. A method of felling trees. The side toward which the tree will fall is chopped. The other side is sawed. Washington State.

they build log houses. Each house has bunks along the walls and a big stove. Here the men camp all winter long.

93. The log drive and the sawmill.—Now begins the work. The ringing sound of many axes chopping at the tree-trunks is followed by the crash of falling trees. The logs, when stripped of branches, are piled on sleds and hauled away over the snow. The snow in these forests does not



Photo. U. S. Forest Service

Fig. 103. Sledloads of logs on the way to a river bank. Thief River Falls.

melt for weeks at a time, but becomes deeper and deeper, until often it is two or three feet deep. But the deep snow only levels the rough places, and makes it easier for horses to pull the huge piles of logs to the banks of the streams. By spring, thousands of logs have been piled along these streams. When the snow melts, the snow water raises the stream. The logs are then rolled into the water to float



Fig. 104. Logs in a river near a sawmill. The logs are kept away from the farther bank by a boom, which is a chain of many logs fastened end to end.

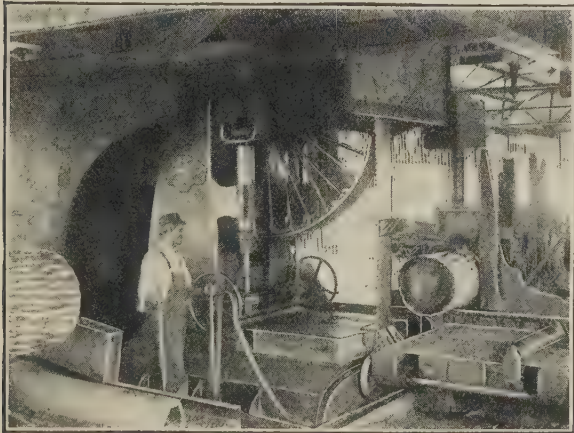
away with the current. Thus they go down to the sawmill many miles away.

Sometimes as the logs float down stream, they get caught against rocks or in narrow places, and hundreds of them pile up, making a log jam. Then it is hard and dangerous work to start the logs again. When they finally reach the sawmill, they lie in the river or mill pond until pulled out to be sawed into boards and other kinds of lumber. (Fig. 106.) Many towns in eastern Minnesota, northern Wisconsin, and northern Michigan have nothing to sell but lumber. Great train loads are hauled away to be used in building houses and barns in

the almost treeless wheat and corn country. Many big steamers carry lumber from the shores of Lake Superior to Chicago, and to cities on Lake Erie.

94. Northeastern lumber region.—On the map of North America (Fig. 48), you will find some highlands between the Great Lakes and the Atlantic Ocean. Perhaps you can find out the names of the states in which these highlands are located. (Fig. 64.) This country is rough and snow-clad in winter, very much like that around the Great Lakes. Much of it is in forests, like those of the Lake district. The lumbering is done in the same way as in the Lake country. Sailing vessels carry lumber from the mills near the mouths of the Kennebec and Penobscot Rivers in Maine (Fig. 228) to Cuba, South America, and Europe.

North of the Great Lakes and the St. Lawrence River in Canada is still more of this rough, forested country. Ottawa, Montreal, and Quebec have a great many sawmills. Every summer ships sail down the St. Lawrence, loaded with lumber for Europe. (See Fig. 64.)



Courtesy of The Wheland Co., Chattanooga, Tenn.

Fig. 105. Inside the sawmill, the log is carried on a little car back and forth against the edge of the band saw, which slices off a board each time the log comes to it. In some mills a circular saw is used.



© Underwood & Underwood, N. Y.

Fig. 106. These men are poling the logs to the endless chain which takes them into the mill after they have been washed. The men are standing on board-covered booms.

95. Southeastern lumber region.—In that part of the Appalachian Highlands which is south of Pennsylvania, snow never covers the ground very long at a time, and the lumbermen cannot use sleds to haul logs as they do near the Great Lakes. Instead, they use wagons. Many of the trees in the southern forests are of oak. There are also forests of fine tall trees of the hard yellow pine that we so often use for floors. The people in these southern states cut a great deal of lumber and ship much of it to countries over the sea. The best-known lumber ports are New Orleans, Mobile, and Savannah. Can you find them? (Fig. 64.)

96. Western lumber region.—In the western part of the United States, there are forests of wonderful big fir, pine, and redwood trees. One of the redwoods is so large that a tunnel has been cut right through and a stagecoach drawn by six horses can drive through the tunnel. There

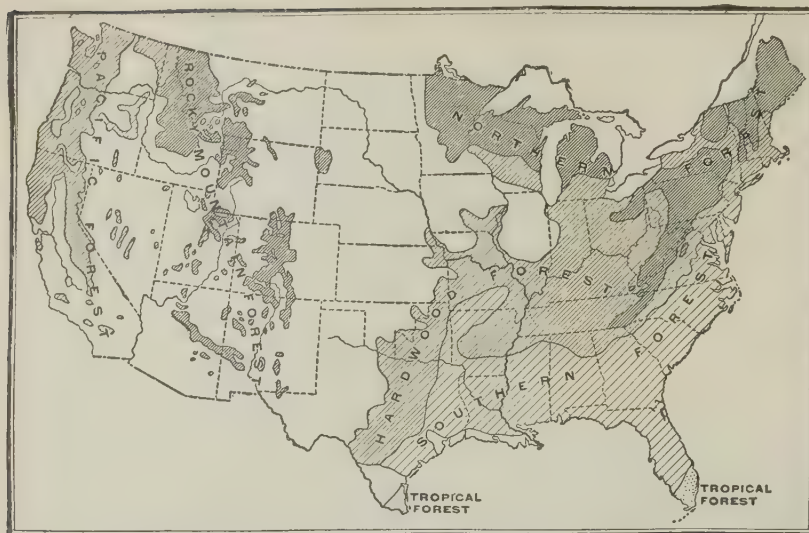


Fig. 107. Map of the United States showing where the forests grow naturally. Point out where the biggest trees of the United States grow. Compare this map with the rainfall map, Fig. 88.

are whole forests of fir, redwood and sugar-pine trees in many parts of the Pacific Coast States, many of whose trunks are six or seven feet through, and ten or twenty or thirty times as tall as a man. How can men get such huge logs to the sawmill? There is no snow over which sleds can be dragged. They are hauled to a railroad by many oxen, or by engines that pull them along by ropes. In some of the steeper places, the logs slide down the mountain side on tracks made of smaller logs.

These great logs make the finest of lumber, some of which is carried by trains across the continent to towns in states that border the Atlantic. Ships carry it from many Pacific Coast ports (Fig. 109) to South America and South Africa, to cities across the Pacific, and often through the Panama Canal to New

York and to Europe. Thus you see what a great task it is to get lumber from where it grows to other places that have no lumber, or at least not enough.

97. European lumber and lumber trade.—In Northern Europe, in Norway, Sweden, and Finland (see Fig. 315), there is a large section of rough, cold country like that around our Great Lakes and Eastern Highlands. Here, too, men go to the woods in

the winter time, and cut down trees for lumber, and when the ice is gone in the spring, hundreds of ships sail away with cargoes of lumber to western and southern Europe, and even to South Africa.

98. The need of caring for forests.—In the United States lumbermen have cut down entire forests over many thousands of miles. This method of lumbering is wasteful, and has made lumber scarce and

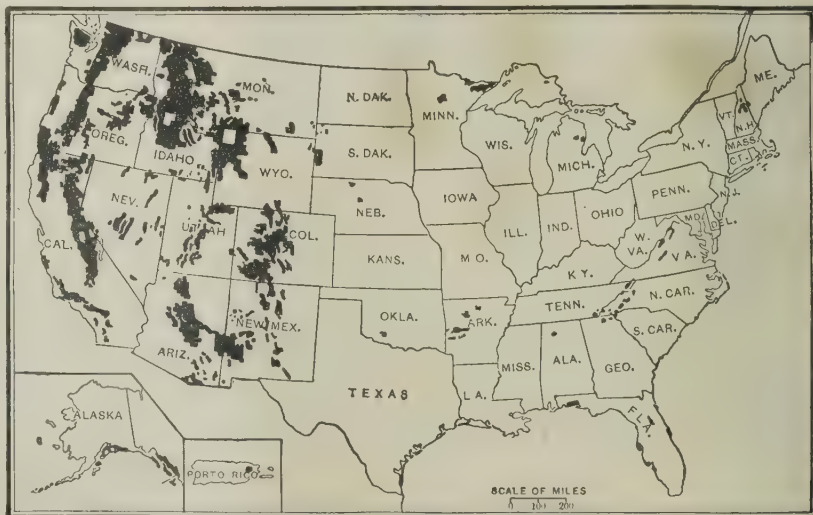


Fig. 108. Map of the United States showing national forests. They belong to all the people of this country.

its price high. People have also been careless and let forest fires burn up millions of trees. Each fall you read about many such fires in the Northwest.

The United States Department of Forestry is trying to stop these fires, and it is also planting new forests in many parts of our country, and in some places is using the same method for keeping our old forests that people in Europe use. Long ago France, Germany and Switzerland found their lumber becoming so scarce that they set aside some parts for forests. Each year in these forests men called foresters mark the trees which are to be cut down. The rest of the trees go on growing till they also are large enough to be cut. Young trees are planted each year. Thus the forests are kept growing and the people are never without lumber.

Wood is used in so many ways that we cannot do without lumber. Most of our paper even is made from wood. Look around you and see how many things in the room came from the forest. Tell of other wooden things that you have seen. Could you get along easily without them?

QUESTIONS

1. How might forest fires be prevented? Might airplanes help? 2. Why should the United States try harder to preserve its forests? 3. If a tree is six feet through, how large around is it? You can work this out by drawing a circle with a three foot string in your school-room, yard, or on the floor. Get your classmates to help you measure the length of the circle. Have you trees as large as this where you live? 4. Of what kind of wood are your schoolroom desks made? The floor? 5. Have

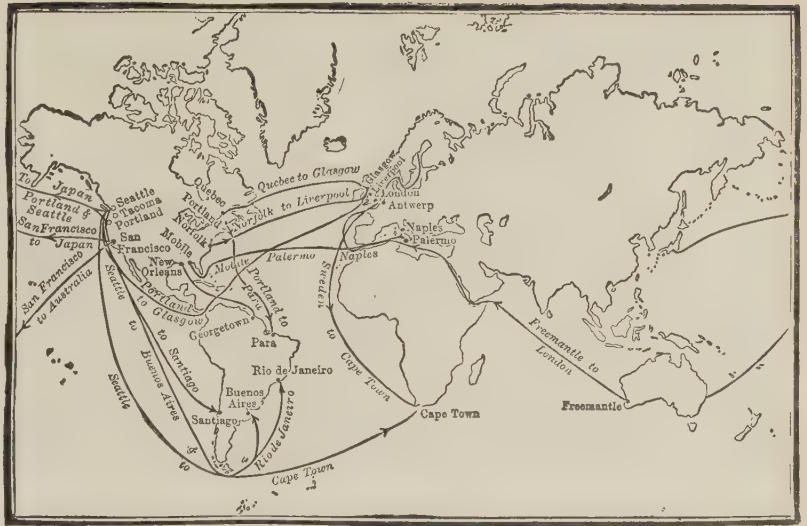


Fig. 109. Map of the world showing lumber trade routes.

you anything at home made of oak? of pine? of hickory? of ash?

6. Fill out the following chart, using your maps to help you (Figs. 228 and 64):

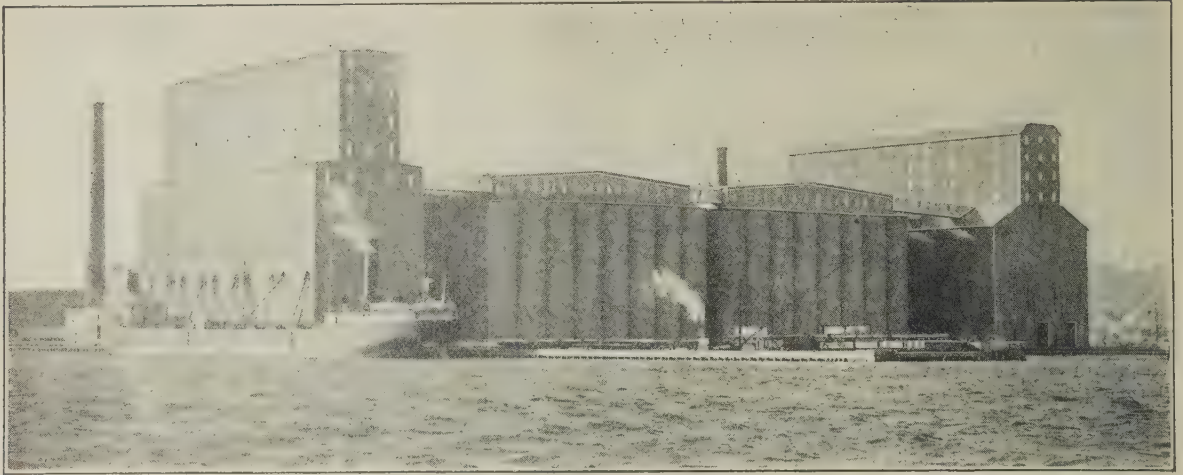
LUMBER PORTS.	STATE.	OCEAN NEAREST.
Bangor, Maine...		
Montreal.....		
Seattle.....		
San Francisco...		
New Orleans....		
Savannah.....		
Portland, Ore...		

7. Trace the route of a cargo of redwood trees from San Francisco to New York by rail; by the Panama Canal. 8. Tell three ways by which logs are taken to the sawmill. Why are there different ways?

9. List the chief lumber states of the United States. Study their location until you can point to or name them quickly. Group them into the North Central States, the Northeastern States, the South Atlantic States, the Gulf States, and the Western States.

GENERAL VIEW OF THE NORTH CENTRAL STATES

99. Large population.—The twelve North Central States now have fifty times as many people as there were in all North America when Columbus first saw the new world. Why have so many



Courtesy of Doubleday Page Syndicate, N. Y.

Fig. 110. Grain elevators at Port Arthur, on Lake Superior, holding 7,000,000 bushels of grain. See the freight cars, and the spouts by which the grain runs into ships. Compare this kind of building with the ones in Argentina, Fig. 300.

people come to these states? Four reasons tell us why they have come: good climate, rich level soil, great mineral wealth, and splendid waterways.

1. *Climate*.—Few parts of the world have so good a climate as has the group of North Central States. It is healthful; it makes the people there feel like doing things. Everywhere the summers are warm or hot, with enough rain to make good crops grow. The winters are cold, with many clear, crisp days. In the southern part, the snow rarely stays more than one or two weeks at a time. How is it in the northern part? (Sec. 93.)

2. *Soil*.—The soil on the great stretches of smooth, level prairies is as rich as any in the world for producing food. What has made the country here so level and the soil so rich, when many other regions are rocky or poor? Glaciers helped to make this land good. The greater part of this region was once, ages ago, covered by the ice of a huge glacier. It pushed down from the north and went nearly as far south as the Ohio and the Missouri Rivers. (See Fig. 64.) Like a giant scraper it scraped

off the tops of hills and filled up the little valleys, thus making much of the country level, easy to plow, good for farming, and easy for travel. However, in some parts of Michigan and Wisconsin, the great ice mass left stones and dirt in irregular piles and ridges, so that the farmer cannot use this land as plowed fields. Southern Ohio and Indiana were not reached by the glacier, and many hills remain. With these exceptions, the soil is wonderfully fertile, and as a result very large crops are produced, as you have already learned.

3. *Great Mineral Wealth*.—These states have enormous beds of iron ore, rich mines of copper and a great deal of lead and zinc, rich fields of coal, and beds of clay. Petroleum and natural gas, the best fuels in the world, are also found. (See Sec. 104.) We shall study about these in other parts of this book.

4. *Railroads and Waterways*.—The fourth reason for so many people in these states is that the level country is as good a place for railroad building as it is for farming. Railroads may easily pass over the low hills or flat places which divide the broad valleys

from each other. Look at Figure 133 and see how many railroads have been built in this region.

And not only is the country good for railroad building but it also has splendid natural waterways. These are the Great Lakes and the rivers. Before the railroads were built, steamboats on the Mississippi and its many branches carried nearly all of the trade of the people living here. Boats on the Great Lakes carried the rest. The first towns to be built in these states were river and lake towns. Some freight is still carried on the rivers, but most of it goes by rail, or by lake boats.

The Great Lakes are often called our "Inland Seas." They are so large that a traveler by boat may be for several hours out of sight of land. Big steamboats are going all summer from the far ends of Lakes Superior and Michigan to the eastern end of Lake Erie. On account of the falls in the Niagara River, they cannot pass directly down this river to Lake Ontario. But the Welland Canal has been dug, and through this boats pass from Lake Erie to Lake Ontario and back again. The Erie Barge Canal, which runs from Buffalo to the Hudson River, lets boats go from the lakes to the Atlantic Ocean. Some of the lake boats are so big that they cannot go through these canals, and on that account their cargoes must be unloaded at some port on Lake Erie, even if the cargo is bound for Europe. These goods, therefore, must go eastward either by train or by smaller boats that can pass

through the canals. Therefore, big elevators have been built at Buffalo.

100. Waterway cities.—Most of the larger cities of the North Central States have grown up where some waterway, either a river or a lake, makes trade easy. Of the thirty-four largest cities of the United States, fourteen are in the North Central States. All of these fourteen big cities are regularly visited by steamboats except Indianapolis, Indiana; Columbus and Akron, Ohio; and Omaha, Nebraska. These four, since they are in the center of level regions having many railroads, use trains instead of boats. In all these cities, and in many others, large numbers of people are busy working in railroad yards, in factories, and in wholesale stores. The factories and the wholesale stores send goods out to the retail stores in the towns and villages.

101. The lake ports.—We have seen how the Great Lakes help to transport the things which the people in the North Central States wish to sell. In places where it is easy for people to reach the lakes with their freight, big cities or lake ports have

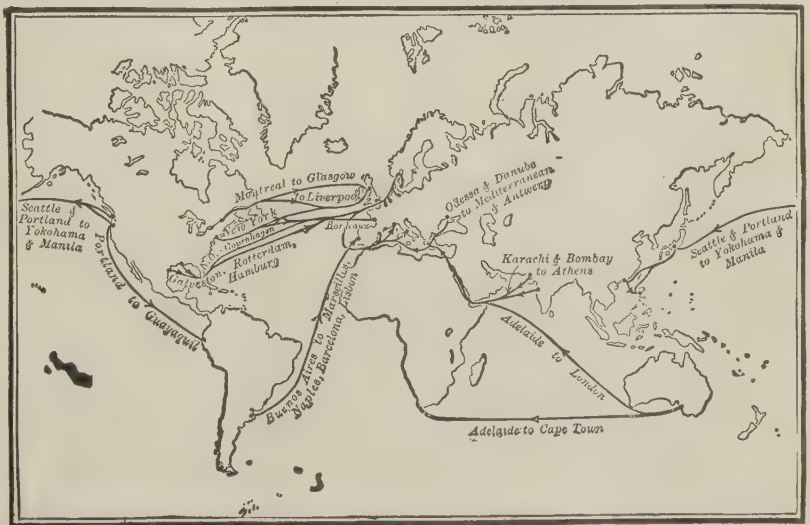


Fig. 111. Map of the world showing wheat trade routes. See Sec. 81.

grown up. For example, Cleveland is so near the coal fields of Pennsylvania and Ohio that it loads coal for shipment to such lake ports as Duluth and Milwaukee, almost a thousand miles away. Much iron ore is mined near the western end of Lake Superior and shipped from Duluth to the cities on the lower lakes. This ore, along with the lumber, the wheat, the corn, and the oats, makes a great trade for the lake steamers; and the canal at Sault Ste. Marie, where the boats go up into and down from Lake Superior through the locks, is a very busy place.

Cleveland and the smaller cities near it have many busy factories using iron made or ore from Lake Superior. The iron is smelted with coal from neighboring coal fields. Here also much iron ore is unloaded and put on trains to go to the iron furnaces at Pittsburgh, Pennsylvania, and at many smaller cities. We shall read more about the iron industry later. (Sec. 191.)

Some of our large cities, such as Baltimore, New York, Cleveland, and Duluth use railroads as well as ships for carrying freight. Many of these main railroad lines pass around the lower end of Lake Michigan and go through the great city of Chicago. This makes this city at the lower end of Lake Michigan a natural railroad center, as well as a great lake port. Boats on the lakes carry freight

so much more cheaply than the railroads can, that people ship their freight by the lake boats if they can do so. Now you see why the lake ports have grown to be great cities, and why Chicago is the largest of them all.

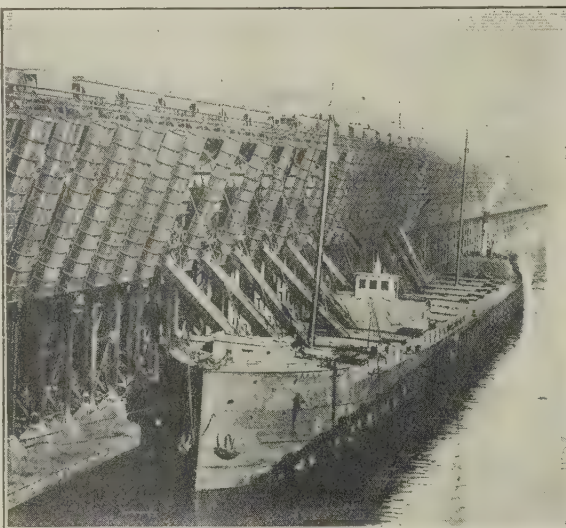
102. Chicago, a great trade center.—

In size, Chicago is the second city in the United States. It is the greatest railroad

center, the greatest grain market, and the greatest meat-packing center in the world. It is also the greatest city for the manufacture of farm machinery, because so many large farms are near it. The lake boats bring lumber for the wooden parts of these machines, and iron ore for the iron parts. The coal from neighboring fields is used to smelt the iron ore and to run the factory en-

gines. There are many factories in Chicago which make from iron many kinds of things to sell. Chicago also has mail-order houses that ship out each day thousands of packages of goods, which go to every state in the United States.

103. The Mississippi River cities.—St. Louis is the chief city of the Mississippi Valley, as Chicago is of the Lake District. It is located on the Mississippi River between the mouths of the Missouri and the Ohio, and boats can run from it to other cities far away—to Pittsburgh on the Ohio, to Kansas City on the Missouri, and to St. Paul and New Orleans on the



Courtesy of L. P. Gallagher, Duluth

Fig. 112. One of the lake boats at an ore dock, Duluth, Minn. The ore slides into the boats through the chutes. See the ore cars on the dock. They have come from the open pit mine shown in Fig. 114. Wheat is loaded in much the same way. (Fig. 110.).



Courtesy of Pillsbury Flour Co.

Fig. 113. One of the big flour mills beside the Mississippi river at Minneapolis, Minn. What in the picture tells you that this mill does not depend upon the water power of St. Anthony Falls? Part of this building must store many hundreds of bushels of wheat waiting to be ground.

Mississippi. St. Louis produces shoes, cars, meat, and many other articles. The very long bridge across the Mississippi helps the merchants of St. Louis to trade with people on both sides of the river.

On the upper Mississippi are the twin cities of St. Paul and Minneapolis. Long before the railroads were built, the steamboats stopped here below the falls of St. Anthony, and white traders began to "swap" with the Indians, who brought them furs. St. Paul, at the head of navigation, is now the capital of Minnesota.

What is the great industry of Minneapolis? (Sec. 79.) The twin cities trade with a large farming region, and have many railroad yards and repair shops.

On the Ohio River is Cincinnati with its meat-packing plants, its clothing and tobacco factories, and its iron and steel industries. All Ohio River cities can get coal very cheaply by boat from Pennsylvania (see Fig. 195), and logs and lumber are floated down some of the branches of the Ohio.

104. Raw materials for manufacturing.

—The North Central States are rich in raw materials. They have grain and meat, coal, petroleum, natural gas, iron, wood, and clay. Coal to run the engines and smelt the ore is found in Indiana, Illinois, Iowa, Kansas, and in eastern Ohio. Natural gas that comes out of wells in the ground near some of these coal fields is carried in pipes to farms and cities to be used for heating, cooking, and lighting. Because of her coal, her gas, and the clay beneath her soil, Ohio leads all the states



Photo. McKenzie, Duluth

Fig. 114. A big steam shovel digging iron ore in one of the open pit mines near Duluth, Minn.



Courtesy of Chicago, Burlington & Quincy R. R.

Fig. 115. Stacking hay in Iowa. Horses pull a rope that elevates the big masses of hay up on the stack. See how flat the country is in Iowa.

in pottery manufacture. Petroleum is found in Indiana and Kansas.

Many wagons and carriages have long been made in these states, and now the automobile industry has grown up in Detroit, Michigan, until there is no other such automobile city anywhere in the world. Over fifty different kinds of automobiles are made in and near this one city.

As the land is so good for farming, there is room near every city, except Duluth (see Sec. 101), for dairy farms to produce plenty of milk. There are truck farms to grow vegetables for people who do not have gardens. Most of the breakfast foods used in the United States are manufactured in towns along the way from the grain fields of the North Central States to the seaports on the Atlantic Coast.

It is easy now to understand why these twelve North Central States have so much trade and so many people. We think of the good climate which makes people feel like doing things; of the rich, level land where it is easy to grow food; of the coal for power; of the iron and wood to build factories; and of the rivers, lakes and rail-

roads to carry goods from one place to another.

There is, however, one part of these States that is less favored than the rest.

105. The western part has little rain.—The rainfall map (Fig. 88) shows that the western parts of Kansas, Nebraska, North Dakota, and South Dakota have less rain than the eastern parts. This western district is too dry for wheat and corn to grow as well as they do farther east. See the wheat and corn maps (Figs. 87 and 79). Here are wide stretches of pasture land and cattle ranches, from which cattle are sent to the corn farms to be fattened. Which has the greater population, eastern or western Kansas? (Fig. 99.) Why?

Even the North Central States have some hills, although no other group of states has so much level land or so few mountains.

106. The small highland regions.—In southern Missouri there is a region of hills and low mountains where the soil is not rich. This highland region is called the Ozark Plateau. Here lead and zinc are mined. Joplin is the mining center.

In western South Dakota you will see

another highland district, the rugged Black Hills, where some gold is mined near the town of Deadwood. A third highland is near Lake Superior, and here, on the peninsula that reaches into the lake, are good copper mines that have chunks of pure copper embedded in the rocks. Some of these mines are a mile deep and extend out under the bed of the lake. Michigan once led all other states in copper production; but now the Plateau States, of which we shall soon read, produce more copper than any other part of the world.

QUESTIONS

1. There are many Indian names on the map of these states. (Fig. 99.) See if you can find one attached to a state, a lake, a river, a city. 2. Name the chief manufactures from farm products; from lumber; from minerals. 3. What animals are raised on the farms of the North Central States? To what cities are many of them shipped? 4. Name the grains and crops that are raised on these farms. What is done with these products? What cities ship them? 5. Give three reasons why farming is one of the greatest occupations in these states. 6. Name the states in this group, and tell how they compare in area and population with the whole of the United States. 7. Many railroads pass through Chicago. Why? 8. Write a list of products made from farm animals in the North Central States. 9. If possible, visit a meat-packing or cold-storage plant and describe it to the class. 10. Draw a map of the Great Lakes, and write in the names of the states touching them. Place circles showing the location of the chief cities. 11. Write by each city the name of one product that might go away by lake steamers. 12. Sketch the Mississippi River with two of its branches and mark the great cities on their banks. 13. Opposite each city named below write the river it is on and the chief importance of the city.

CITY	RIVER	IMPORTANCE
St. Paul.....		
Minneapolis...		
Omaha.....		
Kansas City...		
St. Louis.....		
Pittsburgh....		

GENERAL QUESTIONS

1. Name and bound each of the North Central States. Give their capitals. 2. Draw a map, free hand, showing the boundaries of the states and the locations of the principal cities. 3. What groups of states touch this group? (See map Fig. 63.) 4. List the principal things that the people of these states have to send to other states. Also list the things they need but do not produce. 5. List the things that you get from these states.

THE PLATEAU STATES SHEEP AND WOOL

107. Shearing the sheep.—Would you wear second-hand clothes? Perhaps you think you would not, but you do. Everyone who wears fur clothing or wool clothing is wearing the old clothes of some animal.

On a warm day in May the sheep on a Wyoming ranch are hanging out their tongues and panting, because their thick coats of wool are so hot! Soon a man drives them into a big yard, and (see Fig. 118) in five minutes' time the shearers have clipped their coats off. The clippers are much like those that the barber uses, only larger. They are run by a gasoline engine that keeps a dozen pairs of them going at once. After a few days of shearing, the rancher has four thousand sheep coats, or fleeces, all tied up in balls and stuffed into big sacks ready to be taken to the railroad station on a motor truck, and shipped away to the cloth factory.

108. Making cloth.—For a long, long time, longer than any man now knows, people have known how to twist sheep's wool yarn, and also how to weave yarn into cloth. Once every family had to have a spinning-wheel to make yarn, and a hand loom to make cloth; but now spinning and weaving are chiefly done in factories. There are many such cloth-weaving factories in the city of Philadelphia, Pennsyl-



Fig. 116.

vania, and in Lawrence, Massachusetts. Such factories are also to be found in England, France, and Germany. But there are still Indians in New Mexico and Arizona (Fig. 182) who spin and weave blankets and rugs by hand.

109. The sheep ranch.—The station to which our rancher takes his wool is Cheyenne, in the State of Wyoming. Can you find it? The sheep ranch is forty miles to the north of Cheyenne across a level, treeless plain. By selling the fleeces, the sheep man gets the money to buy the many things he needs and to send his children to college.

When the shearing is over, the sheep are all let loose on the great plain, where they eat grass. In spring there are good rains. The grass grows green and is sprinkled with flowers. The pasture is good; the sheep grow fat.

110. The sheep herder.—But the rains soon stop and the weather becomes hotter. The grass is brown and parched, and each day the sheep herder drives his flock westward toward the mountains. There are two thousand sheep in the flock, or "band," as it is called in the West, and the herder follows them by day and camps by them at night. He has two dogs, three horses, a rifle, and a canvas-covered wagon with a bed and a stove in it. He cooks his own meals, and about once a month the owner of the sheep sends him a fresh supply of food for himself and for the dogs. For days or weeks at a time, the herder does not see another person. He lives a very quiet life out of doors, with his sheep, his horses, and



Photo. U. S. Dept. Agr.

Fig. 117. A shepherd, his dogs, and a flock of sheep on the foothills of the mountains.

his dogs. He could not get along at all without the dogs. They are more help than men could be, for they do just what they are told, and run swiftly to bring a straying sheep back to the flock. At night they wake the herder if wild animals come near. His rifle brings down many wolves and foxes that come sneaking around to get young lambs to eat.

111. Mountain pastures.—The sheep herder takes his sheep to the mountains where there is more rain and therefore better pasture than in the plain. The summer pasture is in the valleys among the mountains, and in the open forests on the lower slopes. When autumn comes, the herder drives his flock slowly back to the ranch, where they spend the winter near the house of their owner. Sheep herders with their big flocks may be found in every one of the Plateau States from southern New Mexico to northern Montana, from eastern Colorado to western Nevada.



Photo. Brown Bros., N. Y.

Fig. 118. Shearing sheep on a big ranch. The man at the left holds the wool from one sheep.

112. High plains with little rain.—We call these states Plateau States because the surface of the plain east of the Rockies is high. High plains are called plateaus. The one just east of the Rocky Mountains is higher than the tops of the mountains of Pennsylvania (Sec. 201), yet much of it is as level as a lower plain, like that of Illinois. It rises gradually as we go toward the Rocky Mountains. The plains of Utah and Idaho and Nevada are about as high as those on the eastern side of the Rocky Mountains; yet these plains, too, are often level for long distances, with high mountains rising here and there above them.

Everywhere this is a land of but little rain, not enough to allow people to grow crops of corn and wheat as they do in the North Central States. (Figs. 52, 117, and 88). In many places, trees grow only along the streams, and you may ride for days without seeing a single tree. Flocks of sheep, and also herds of cattle and horses

eat the small amount of grass that grows on these plains, and also that which grows in the mountains.

113. Irrigation and hay.—Here and there a stream flows out of the mountains on to a level plain where the people can easily make ditches, which carry the water out on the fields to water the crops. This method of watering crops is called irrigation.

Most of the irrigated land in these states is planted to alfalfa, a kind of grass that sometimes grows as high as a man's waist. It is cut with mowing machines and dried in the sun. It is then called hay, and is stacked up for the sheep and cattle to eat in the winter. Many of the sheep and cattle from the Plateau States are shipped in freight cars to the corn belt farms to be fattened on corn, oats, and hay before they go on to the meat packing plants about which we have already read. (Sec. 86.)

The higher mountains in these Plateau States are deeply covered with snow in winter, but there is not so much of it in the plains and valleys as there is in the North Central States. The ranch owners here do not often build barns for their sheep and cattle, and some of them do not even put up hay for winter food for their animals. Instead they keep some land



Photo. Doubleday Page Syndicate, N. Y.

Fig. 119. Sheep on the plains digging away the snow with their feet to get the grass beneath. Are their hoofs very good for this work?

unpastured in the summer, so that the animals may eat dry grass in winter. Sheep and horses will dig through snow with their feet to find the grass that lies underneath, still sweet and good to eat.

114. Sheep in other countries.—We can find sheep herders with their flocks and dogs in every continent. As you study each continent, you will learn where the sheep lands are. Australia, a land of little rain, has more sheep than can be found in all North America.

Argentina, in South America (Figs. 120 and 284), is another country with millions of sheep,—more than we have in all North America. We found (Sec. 81) that the people of eastern Argentina grow wheat and corn near the Parana River, where there is good rainfall. But to the westward, there is less rain, and the sheep herders have an enormous plain over which to drive their flocks. This plain is as big as our Plateau States. The sheep raised



Fig. 120. Map of the world showing where sheep are grown. Each dot stands for 200,000 sheep.

here are later sent eastward to be fattened on alfalfa, and are then sent on to the packing plants. (Sec. 294.)

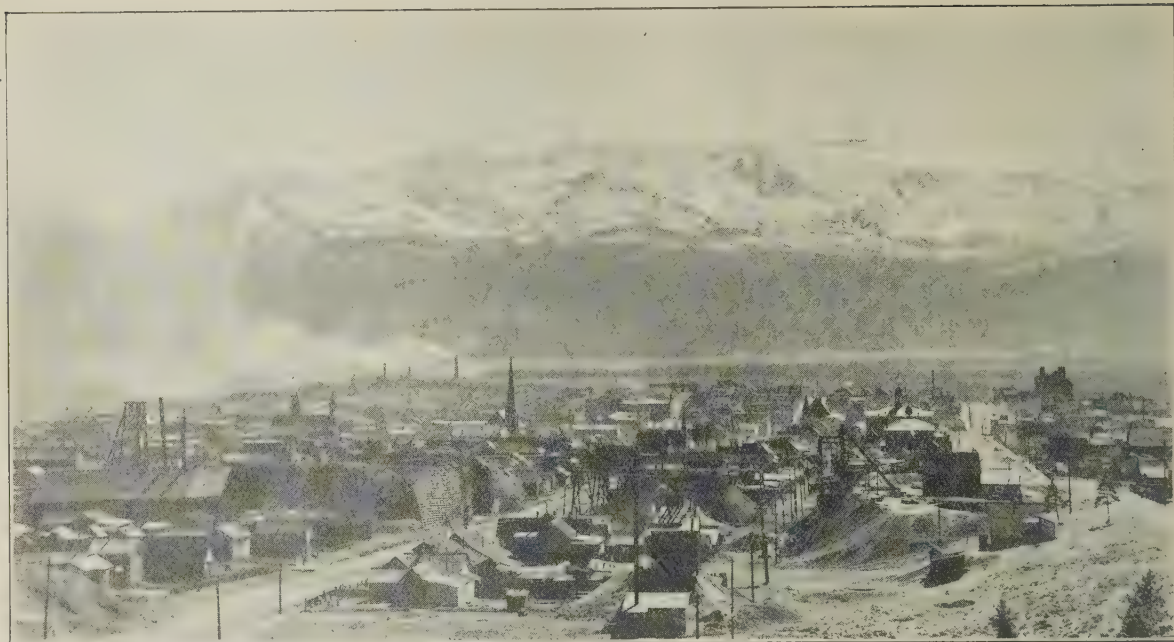
115. Carpet wool from Asia.—If you will look at the rainfall map of the world (Fig. 89) you will see a great region of little rain reaching through southern Europe, western Asia, and central Asia. The world sheep map shows that sheep are found in all of this region, at least in all of it that is not too dry for grass to grow. If you were on a steamer at a port on the Persian Gulf, you would see on the hills back of the little town long strings of camels bringing big bales of wool down to the steamer. They bring it over many mountain ranges from the places where the Persian shepherds, far in the interior, shear their sheep. Some of this wool comes to the United States where it is made into carpets. It is too coarse for clothing.

116. Sheep in Europe.—The sheep map (Fig. 120) shows that there are (or were before the World War) many sheep in Spain, Italy, Greece, and the Balkan countries. It is so rough and hilly in these countries that little of the land can be made into fields for plowing and hoeing. (See Fig. 374.) For this reason it is used only



Photo. U. S. Dept. Agr.

Fig. 121. Angora goats in South Africa. Their wool is nearly a foot long.



Courtesy of Denver and Rio Grande R. R.

Fig. 122. A view of Leadville, Colorado. Elevation, 10,000 feet. Mt. Massive in the distance, 14,202 feet high. See the piles of refuse around the mouth of a mine.

for pasture, and flocks of sheep make up much of the small wealth of these people. The sheep map shows that England and Scotland also have many sheep—a great many indeed for such small countries. The rainy climate makes rich pastures on the hilly land.

QUESTIONS

1. Look at the picture of the shepherd and his dogs, Fig. 117. How does the dog help the shepherd? 2. Point to a valley between mountain ridges. 3. On the map of the Plateau States (Fig. 116) note the number of rivers that rise in the snows of the Rocky Mountains. Name two of these rivers in Montana, one in Wyoming, two in Colorado, two in New Mexico, one in Idaho. Into what water does each of these rivers flow? 4. Bring a bit of wool or raveled woolen cloth to school. Pick out some fibers and twist them into a thread. If you can get a bit of raw cotton, twist its fibers. Which is harder to twist?

5. How does the surface of eastern Colorado differ from western Colorado? In which part are there more large towns? (Fig. 116.) 6. How does the surface of Arizona differ from that of the corn states? 7. What two cities in

the eastern states spin and weave wool? From what country in South America does raw wool come? What seaport in Massachusetts receives it?

8. Near what meridians are Buenos Aires and Boston? Which is nearer London? 9. What general direction will the ship take that carries Argentine wool to Boston? Why must it first go east to get west? Where does it turn?

MINING

117. The prospector.—In the Plateau States a traveler often sees a lonely miner climbing up some mountain path. The man is a prospector, one who hunts through the mountains looking for the precious gold, silver, or copper for which men will pay so much money. These metals, mixed with earth or stone, often lie buried beneath the soil or rocks. We call this mixture ore. If a prospector finds good ore, he stakes out his claim and the government gives the piece of land to him. Most of the land in the mountains still belongs to the government, because it is not good for farms.

We can often see in the rocky hillsides holes that have been dug by prospectors hunting for ore. Most of the holes contained no ore and were worthless, but no one could know it without digging. It often takes long hunting to find the places where metals lie hidden. Some prospectors hunt all their lives for good mines, and barely find enough ore to buy food.

118. The mining town.—Once in a while the prospector finds in the rocks a rich seam of metal which makes him wealthy. Other miners hear of the great find, and flock to the place to try their luck. Thus a town soon springs up, even though the location is a poor one for a

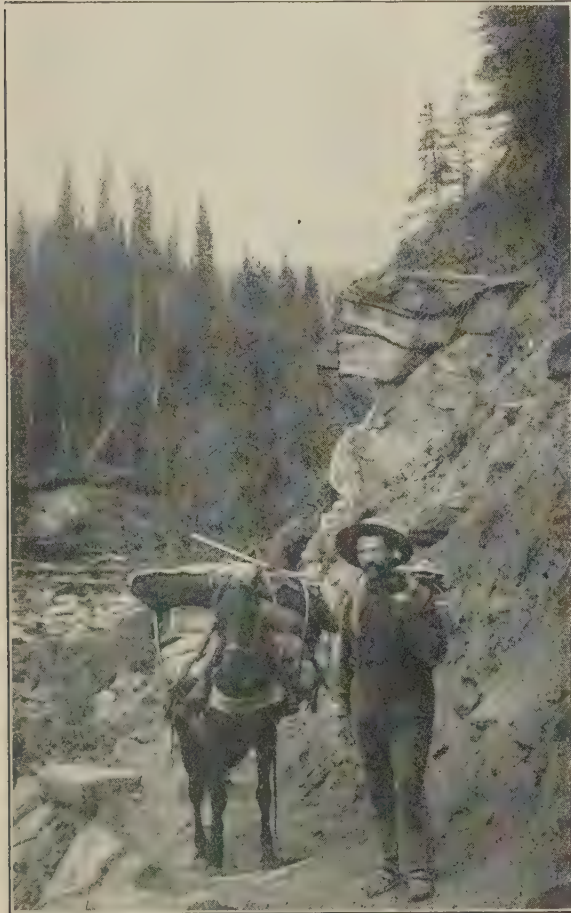


Photo. Doubleday Page Syndicate, N. Y.

Fig. 123. A prospector starting out to find gold or silver.



Photo. Doubleday Page Syndicate, N. Y.

Fig. 124. A gold miner working with pick and pan by a stream in Alaska.

city. Leadville, in Colorado, is such a mining town. It is so high that it is too cold to grow much food. It is the highest city in the United States, nearly two miles above the sea (10,150 feet). Sometimes there is frost every month in the year there. When the miners have dug all the gold and silver and lead out of the mines, nearly everybody will move away from Leadville. Many mining towns have been abandoned entirely, and others have sprung up in new places within a few weeks after the metal was found. Gold was found a few years ago in the Nevada desert. Miners rushed there, railroads were quickly built, and soon the thriving towns of Tonopah and Goldfield stood on land so dry that one could never hope to

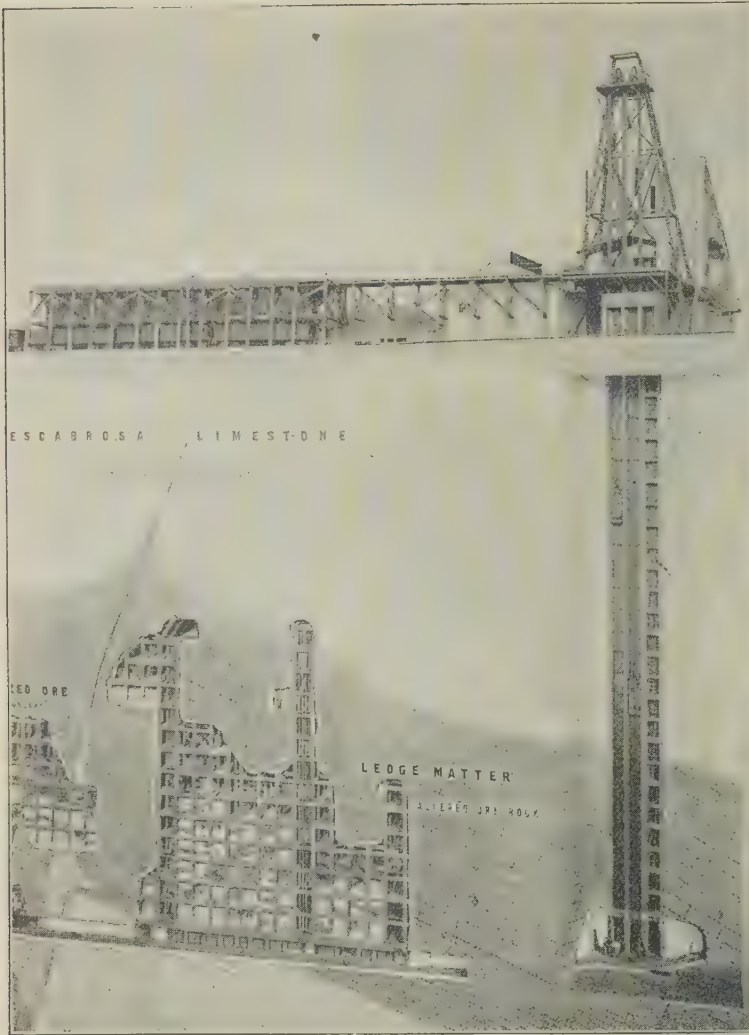


Photo. Amer. Mus. of Nat. Hist., N. Y.

Fig. 125. A model showing a plan of a mine. On the right is the elevator shaft. The elevators take the miners down and lift the ore up. In the center, you can see how great chambers and streets have been dug deep down in the earth. One of these streets is shown in Fig. 126.

Fresh air for the miners is pumped through the mine constantly.

have a garden, or even a shade tree as high as his porch. But as long as gold comes out of the mines and railroads carry freight, the people there can buy all kinds of things from distant places.

119. A copper center—At Butte, Montana, there is a great hill with many wonderful seams or veins of copper in it, running down deep into the ground. Tunnels and passages are being dug through it in

all directions, and every day carloads of copper ore are lifted to the surface by electricity. Thousands of men work there all the time, and under this one hill there are hundreds of miles of abandoned tunnels.

Butte produces almost nothing to sell except copper and silver, but these are of great value, and much money is received from their sale. The stores in Butte have as many things in them as those of any other town or small city, and the children have just as fine schools and desks and books as have the children of Chicago or New York. Can you tell some uses of copper?

The mines of Butte made it possible for Montana to produce more copper than Michigan for a few years; but now the state of Arizona leads in producing copper. In Utah, and at Ely in eastern Nevada, copper ore has been found in deposits that can be worked with steam shovels. This method is much easier and safer than going underground.

Mining is hard and often dangerous work. Sometimes when the men are hundreds of feet below the surface digging passages in the rocks and blasting them out with dynamite, great masses of rocks fall in on them, or imprison them far underground.

120. The mines of Mexico.—If you will look at the physical map of North America (Fig. 48), you will see that the western

highlands reach northward from the United States into Canada and southward into Mexico. There are many rich silver, gold and copper mines in the highlands of Mexico. When the Spaniards first found this country, they were surprised to see how much gold and silver the people had. To this day, mining is the chief industry of the Mexican highlands.

121. South American mines.—

If you look at the physical map of South America (Fig. 279), you will see that there is a long western highland in that continent, as there is in North America. Here, too, the Spaniards found that the Indians had much gold and silver. Because the Spaniards wanted this



Courtesy of Anaconda Copper Mining Co.

Fig. 126. An electric locomotive hauling cars of copper ore in a mine at Butte, Montana. In some mines mules are used to pull the cars instead of electricity. (See Fig. 200.)

gold and silver, they conquered the country and made slaves of the Indians. They put them to work in the mines, and took the gold and silver and sent it to Spain. The mines are still worked.

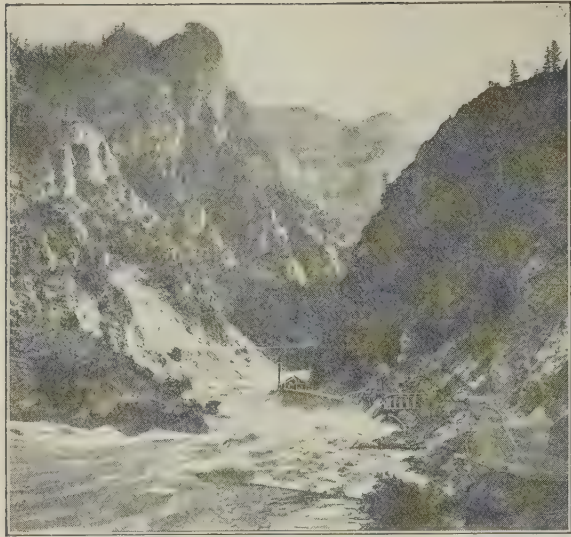
122. Gold in North America.—Much gold is found in the mountains of California and in Alaska. Some of it is mined by dredges driven by electricity. Often where rock containing precious metals has been worn down or broken up, little pieces of gold are found in the sand and gravel in the stream beds. In Alaska and along the Yukon River in the province of Yukon (Fig. 243), the miners sometimes get the grains of gold out of the sand by panning it. (Fig. 124.) This is done by taking some sand and water out of a stream and stirring it around in a pan like a wash basin, until the heavy gold settles to the bottom. Then the sand is carefully washed out and the miner can get a few grains of gold.

The miners first found the gold of California and the Pacific States in stream beds. Later, they found the ore rock with



© Keystone View Co.

Fig. 127. In a copper mine. A miner is using a compressed air drilling machine to make holes in the rock, for the explosives. This machine makes holes very rapidly. Calumet, Michigan.



Courtesy of Denver and Rio Grande R. R.

Fig. 128. Rapids in the canyon of the Grand River, western Colorado. A power plant uses the swift water to make electricity. A railroad follows the river.

gold in it, from which the streams had carried the gold after having broken up the rock into sand, dirt, and the particles of gold. The gold-containing rock is called a mother lode, because the gold grains in the stream bed came from it, and, one might say, are its children. The rock of these mother lodes can be crushed fine and the gold removed. Expensive machinery and much work are needed. Sometimes the buildings around a mine are so large that they look almost like a whole village or town under one roof.

123. African gold mines.—Away off in South Africa; at a place called Johannesburg, are some of the richest gold mines in the world. Some of these mines are a mile deep. They are owned by Englishmen, but most of the work is done by black men who come there from Central Africa. (See Fig. 425.)

QUESTIONS

- 1. Name something that is made of copper.
- 2. Find some of the uses of lead.
- 3. Fill out the following chart. Write neatly and spell correctly.

STATE.	CITY.	MINERALS FOUND.
Arizona.....		
Montana.....		
Utah.....		
Nevada.....		
Colorado.....		

- 4. Which parts of Montana, Wyoming, Colorado, and New Mexico have great stretches of fairly level plains?
- 5. Through what part of these four states do the Rocky Mountain Ranges run?
- 6. Why is Nevada so thinly peopled?
- 7. Which states are noted for copper mines?
- 8. Look at Fig. 123. What kind of country is shown? Are rocks there being worn away? Where is the stream carrying them?
- 9. Which life is more interesting to you, the lonely shepherd's with his dogs and sheep, or the lonely prospector's with his horse or burro?
- 10. Why can not vegetables grow in Leadville?
- 11. How do the mountains in Fig. 122 differ from the Appalachian ridges? (Fig. 46)
- 12. Write a story about the life of the shepherd of the plains of Wyoming or Colorado.

GENERAL VIEW OF THE PLATEAU STATES

124. Size and climate.—The Plateau States, with their plains, mountains, and forests, their sheep, cattle, and mines, cover a very large region. Measure the map to see how wide and how long they are. It would surprise you to see how different the climate of some parts of this group of states is from that of other parts. In the north, the winters are cold, very cold. Often in Montana the thermometer reads forty degrees below zero, and the high mountain tops as far south as Colorado are deep in snow as late as June. On the other hand, snow never falls in southwestern Arizona, near the mouth of the Colorado River. There it is so warm that date trees from the Sahara Desert in Africa grow and bear good fruit.

In some places on the mountains there is enough rain to make fine forests. In other places there is so little rain that streams

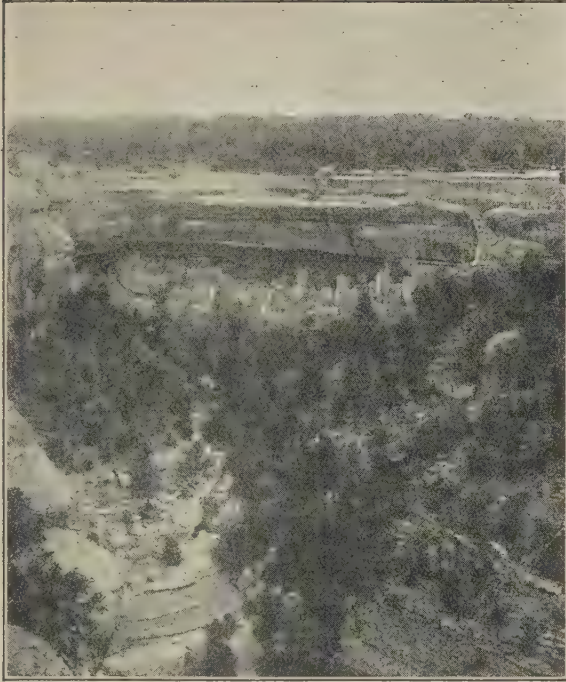


Photo. George L. Beam, Denver, Colo. Courtesy of National Park Service
Fig. 129. Ancient Cliff Dwellers' ruined village built high up on the canyon side, where they would be safe from attack by enemies. Mesa Verde National Park, southwestern Colorado.



Photo. Denver and Rio Grande R. R. Courtesy of National Park Service
Fig. 130. Near view of the ruins of the Cliff Dwellers' village shown in Fig. 129. No one knows how many hundred years old it is. In the rooms, many very interesting relics of the Cliff Dwellers have been found.

do not reach the sea. They dry up, sink into the sand, spread out in muddy flats called sinks, or run into lakes that are salty because they have no outlets to the ocean. Parts of Arizona and Nevada are true deserts, where nothing grows on the bare sand and clay. In other places, only a few scattered bushes grow.

Only in small parts of the Plateau States is there enough rainfall to let the farmer grow crops. There is one reason why these states have but a fifth as many people as the North Central States have. The part between the Rocky Mountains and the Sierra Nevada and Cascade ranges has less rain than the rest of the district. Why is this? Rain comes from the moisture which the air drinks up from the ocean. When the wind blows toward the land, it carries this moisture from the ocean to the land,

and there it falls as rain. When the west wind blows from the Pacific Ocean to Nevada, it has to cross two mountain ranges, one of which is very high. (See Fig. 68.) Whenever wind blows against high mountains, most of the rain falls before the wind gets over the top.

Look at the rainfall map of the United States (Fig. 88), and you will see that there is a great deal of rain on the western side of the Sierra Nevadas. The air drops so much of its moisture there that very little is left to be carried across the mountain tops into Nevada. This is the reason why the rainfall map shows Nevada to be a dry section.

Again, you see more rain on the high Rocky Mountains, and less on the Great Plains to the east of these mountains. You can see from the map (Fig. 116) that

since the north winds and the south winds from the Plateau States have to come over high lands, they cannot bring rain. Farther east, in the country to the north of the Gulf of Mexico, we again see more rain. (Fig. 88.) South winds blowing from this large body of warm water bring the moisture for most of the rain of the central part of the United States.

125. Salt lakes.—

You remember that in our journey across North America (Sec. 40) we came to a very dry country in Utah and Nevada. It is there that the streams run into salty lakes. Why are the lakes salty?

There is a little salt in all streams. When the lake water dries up or evaporates, the salt brought by the streams stays in the lake. You can see how this happens by putting some salt into a glass of water and letting the water dry up. The water of the Great Salt Lake is so salty that it would kill you if you drank much of it, and it is so heavy with salt that if you bathe in it you float around like a piece of wood, and cannot sink if you try.

126. Early settlement and railroads.—

As the United States was first settled on the eastern coast, it took men a long time to find out about the country west of the central states. When we elected our first



Photo. J. T. Boysen

Courtesy of National Park Service

Fig. 131. A New Mexican Indian woman mending the hand-made basket in which she carries burdens on her back. Some Indian baskets will hold water.

president in 1789, we did not even know that there were any Rocky Mountains. We did not know much about this region until 1849, when many people went in wagons from the eastern states to California to get gold, of which they had heard great stories after its discovery there in 1848. These people are often spoken of as "Forty-niners." They traveled across the deserts of Nevada and Arizona; many of them lost their way and died of hunger and thirst. Some

were killed by the Indians. Others reached the Pacific Coast only after much suffering.

The first large settlement in these states was made by the Mormons in 1847. In that year they made their homes along the streams that flowed out of the Wasatch Mountains toward Great Salt Lake, near Salt Lake City. Soon after this, gold and silver were found in the mountains of Colorado and Montana, and mining camps arose in the wild places where only the Indians, the bears, and the wolves had been before. The pony express carried the mail from Omaha, Nebraska, to these people in the mountains and from there carried it on to California. That is, one man galloped a certain distance, and then gave the mail sacks to another man, who sat waiting for them on his horse. The

second man took the sacks a certain distance to another man, and so on. (Fig. 134.) Thus the sacks never stopped moving day or night, as they crossed the plains where the millions of buffaloes had pastured for thousands of years.

In 1869 a railroad from Omaha, Nebraska, to San Francisco, California, was completed. It was partly paid for by the United States Government and passed through Nebraska, Wyoming, Utah, Nevada, and California. This road is often called a trans-continental road. (*Trans* means *across*.) There are now several such railroads passing from east to west, one or more through each of the Plateau States. (Fig. 64.)

127. Irrigation.—

This region is so dry that most of the farmers cannot depend on the rain to water their crops. The people must do it themselves. When the Mormons first settled in Utah, they made dams in the small mountain streams and dug irrigation ditches and soon had good gardens and large crops where before only worthless bushes had grown. This was the beginning of irrigation in the United States. (Fig. 135.)

In all this great region there are now irrigated farms in almost every valley

that has good level land and a river. The best places have been taken for years, and the water is all used up, so that in summer drought stream beds become dry ground. More homes could only be made by getting more water. This has been done by building dams in the mountains and making large reservoirs, or lakes, to hold the water that would otherwise run away at times of flood and when the snow melts. Some of these dams have cost millions of dollars. Hundreds of men worked for years to build them. Then large canals, many miles long, had to be built to carry the water across the plains and along the mountain sides, to the places where it could be used. This work is too

much for one farmer to do, or even for all the farmers in a neighborhood, so the United States Government is doing it. After the engineers of the Department of the Interior build the dam and bring the water to the farms, the farmers gradually pay for the dam and the canals. Then the irrigation system belongs to all the people who use the water from it.

Many of the streams that carry water to the farms would be dry if it were not for the snow that lies on the high mountains until summer time, and then



Courtesy of National Park Service

Fig. 132. Looking down into the Grand Canyon of the Colorado. See the flat layers of rock cut into many shapes by the air and water as they dug this gorge. The Indian can see the Colorado River a mile below the lookout rock on which he stands.

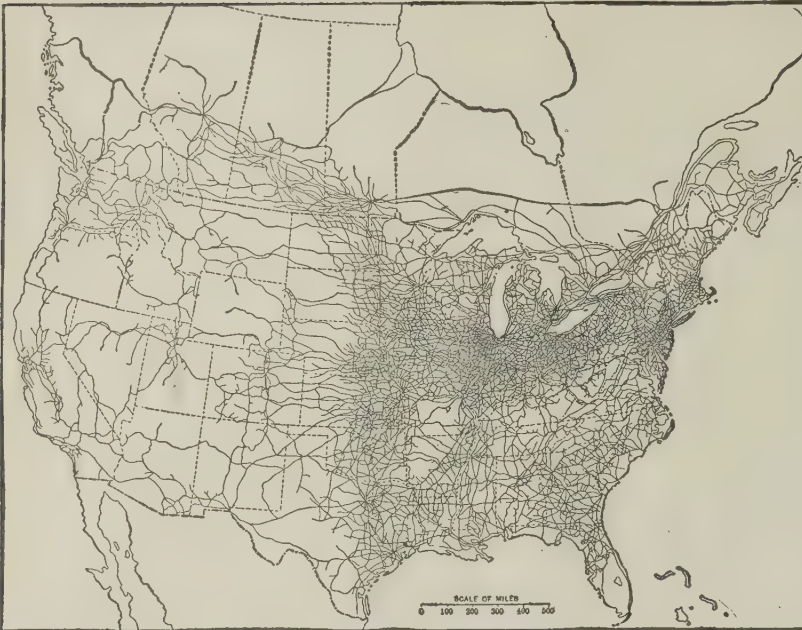


Fig. 133. Railway map of the United States and Southern Canada. Why are so few railroads to be found in the Plateau States? Why does Eastern Kansas have so many more lines than Western Kansas? Find Chicago.

melts just at the time that the farmer needs the water for his crops. In March or April, the people in many a valley can look up at the distant mountain and tell how their crops will be the next summer. If the snow reaches far down the mountainside, it means plenty of water and good crops. If the snow lies high, it means scanty water and poor crops. (Fig. 138.)

Only a very small part of the Plateau States can be irrigated, because there is not enough water for all of the region. An irrigated field is very valuable because it yields such large crops of hay, grain, potatoes, vegetables, or apples. Unirrigated land near by is worth almost nothing.

The chief crop grown by irrigation is alfalfa, which is raised for the sheep and cattle. Next to alfalfa, sugar beets are the most important crop on the irrigated lands of the Plateau States. The cool climate of the plateau suits beets, and there are large factories to make them into sugar. In

some of the irrigated valleys the farmers grow wonderful crops of potatoes. In others there are fine orchards, from which big red apples are sent to many eastern towns and cities.

128. Mountain forests and irrigation.—The people who irrigate are very anxious to have forests on the mountains above them. The shade of the trees on the mountains makes the snow lie longer, and the fallen leaves make the melted snow soak into the ground better.

This moisture will come

out later as spring water and flow down to the farms. To be sure that the people shall have both water and timber, the United States Government has set apart as national forests nearly all the mountain forests of the Plateau States. Thus the forests belong to all the people, and every summer hundreds of men who work for the United States Department of Agriculture patrol these forests to put out forest fires. (Fig. 108.)

There is much irrigation along the Arkansas and South Platte Rivers in Colorado, the North Platte in Wyoming, and the Yellowstone in Montana; but the Snake River Valley in Idaho has more irrigated land than any other valley in this group of states. Much grain, hay, and many vegetables are grown here.

129. Indian reservations.—There are large tracts of land in these states that have been set apart as homes for the Indians. These sections are called Indian

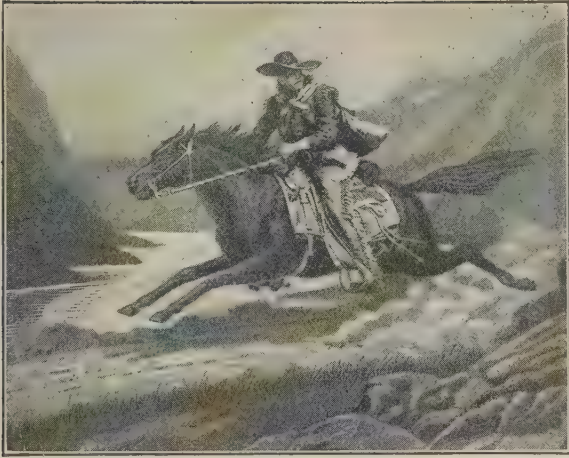


Photo. Brown Bros., N. Y.

Fig. 134. The Pony Express, which carried the first mails between the Rocky Mountain country and the East. Postage was fifty cents a letter.

Reservations, and a white man cannot own land on them.

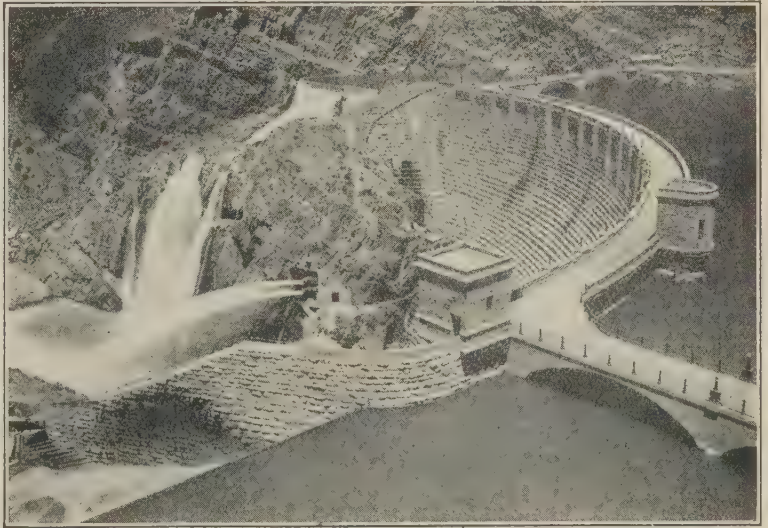
130. Beautiful scenery.—Many travelers visit the Plateau States each summer to see the beautiful sights of the high mountains. In northwestern Wyoming is a wild and beautiful region of mountain and forest called Yellowstone National Park. No man can own land there, for it belongs to everybody in the United States. In one of its valleys are many hot springs and geysers. Geysers are large springs that lie quiet for a few hours and then suddenly shoot thousands of gallons of boiling water and steam up into the air, some times as high as a ten-story building. In one part of the park, it is possible to catch fish in a lake and turn around and cook them in a boiling spring.

Since no one is allowed to hunt in this park, the bear, elk, and bison are tame and

friendly. One of the sights of the park is the bears having a fine time eating the garbage from the hotel kitchens.

In Arizona is another of the great scenes of the world, the Grand Canyon of the Colorado River. Here you can stand on the edge of a high plateau and look almost straight down at the water of the river a mile below you. The river has cut a narrow, sharp valley through the rock, whose sides are so steep you cannot climb up or down until paths have been made. The rocks are red, yellow, green, brown and white, and have been gullied and carved by the running waters into every shape you ever thought of and many more besides. This is one of the most beautiful sights in the world, and people come from all over the world to see it. (Fig. 132.)

When we think how many thousands of years it must have taken for the running water of the river to wear this valley a mile deep, we begin to understand how very old the earth must be. Yet many deep valleys are older than this one.



U. S. Reclamation Service

Fig. 135. The Roosevelt dam on Salt River, Arizona. Enough water may be stored here to irrigate thousands of acres. The water is also used to make electricity, which is carried many miles by wire.

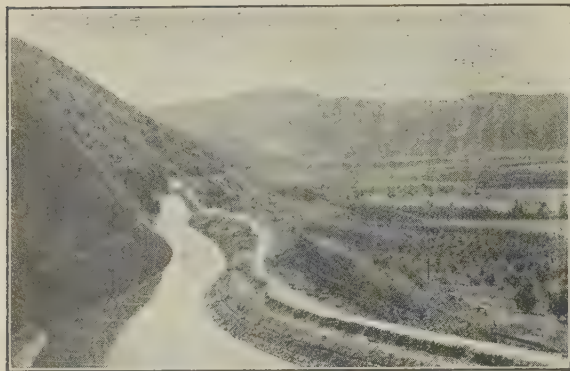


Photo. Brown Bros., N. Y.

Fig. 136. An irrigation canal and irrigated orchards, Wenatchee Valley, Washington.

131. Cities.—The Plateau States have chiefly three kinds of cities: the mining cities, the trade center cities, and the health resort cities. Among the mining cities are Butte and Anaconda, Montana; Globe and Bisbee, Arizona; Tonopah and Goldfield, Nevada. Denver and Salt Lake City, with coal mines near them, have large smelters to which ore from many scattered mines is sent.

All the cities have some trade with the miners and farmers, but the chief trade centers are Denver, Colorado; Boise, Idaho; and Salt Lake City, Utah.

The third kind of city is the health resort. The dry air of the plateau gives it a favorable climate for people who have trouble with the throat and lungs. Colorado Springs, near Denver, and Phoenix, Arizona, are well-known health resorts.

QUESTIONS

1. How do the heavy winter snows on the mountains affect the rivers of Idaho and the other Plateau States in spring? 2. Where in Arizona is the Salt River? Why was the Roosevelt Dam (Fig. 135) built? 3. Who uses the water which spreads out into a great lake behind this dam? 4. Why are there so few large cities in the Plateau States?

5. What grows on the irrigated farms near Wenatchee, Washington? 6. What crop will grow in southern Arizona that will not grow in

northern Idaho or Montana? 7. Why are these mountain sides so bare, while the Green Mountains of Vermont are covered with forests? 8. Have you ever heard of the thermometer going as low as 40° below zero? If so where? 9. How low and how high does it go where you live?

10. Why are there national forests? (Fig. 108.) Where are they? Who cares for them? 11. Is there a national forest in your state? 12. Choose either the Grand Canyon of the Colorado or Yellowstone National Park and prepare an advertising circular such as the railroads might issue to travelers. Include in the circular an interesting description of the Park or the Canyon, some pictures, and a map.

GENERAL QUESTIONS

1. Name and bound each of the Plateau States. Give their capitals. 2. Draw a map, free hand, showing the boundaries of the states and the locations of the principal cities. 3. What groups of states touch this group? (See Fig. 63.) 4. List the principal things that the people of these states have to send to other states. Also list the things they need but do not produce. 5. List the things that you get from these states.

THE PACIFIC STATES AND ALASKA

ORANGES AND DRIED FRUIT

132. Orange growing.—The orange box at the store has on it the address of the man who sent it to market. It is almost sure to have been sent from a place in Florida or in California (Fig. 194), because these two states have the warm winters needed by the orange tree. The orange tree does not drop its leaves and sleep all winter as many trees do. It stays green all the year with flowers, green fruit, and ripe fruit on it all at the same time. These trees need much care in their feeding and cultivation. Sometimes tents are put over the trees and filled with poisonous gas to kill the insects that bother the trees.

A warm climate is needed by the orange tree. Most of California is warm enough but it lacks rain, as little rain falls from



Fig. 137.

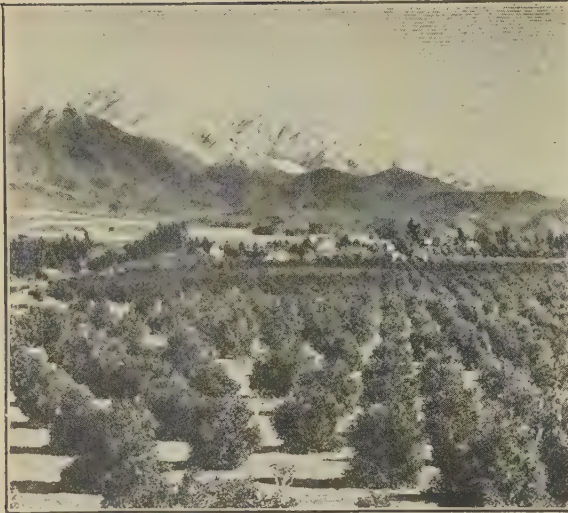
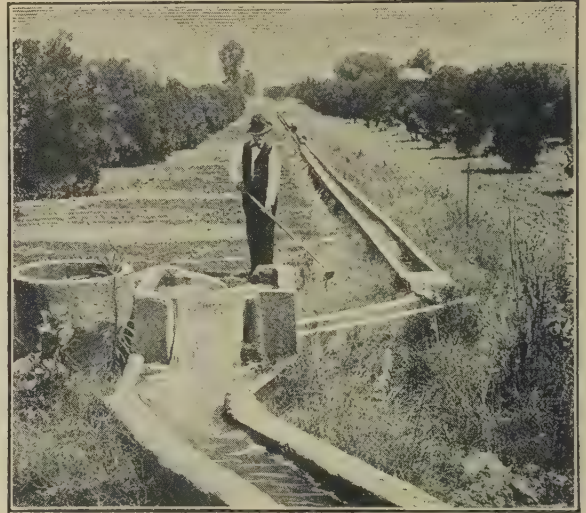


Fig. 138. A California orange grove. Find the foothill pastures, and snow-covered mountains. Find gullies from which earth was washed to build up the level plain.



© Underwood & Underwood, N. Y.

Fig. 139. A cement trough carrying water to irrigate orange orchards in California. Why use a trough?

April to November. The orange growers build irrigation ditches, but they also pump water to the orchards from wells which they dig. Irrigation costs a great deal of money, but as a result of it, one may find wide valleys filled with beautiful orchards as far as the eye can see. Many lemons are grown here also, as lemons need the same climate as oranges.

When the fruit is ripe, everybody is busy picking, sorting, and packing it for market. The boys and girls help; so do the women. Many Chinese and Japanese also work in the orchards and packing houses.

133. Coöperation.—The growers often work together and do things they could not do if working alone. The orange growers of a neighborhood form themselves into an association to pack their fruit and sell it and buy supplies together. This plan we call coöperation.

134. Dried fruits.—While the climate of California is too dry for oranges unless the land is irrigated, it is just suited to the drying of fruits. If you look at the boxes of dried prunes, dried apricots, dried

peaches, and raisins (dried grapes) in the stores, you will find many California addresses, but no Florida addresses, even though much fruit is grown there. In Florida there is so much rain that one cannot dry fruit as easily as in California. Because of the rainless California summers, the people who have orchards of prune trees or peach trees, or vineyards of raisin grapes, can pick fruit by the wagonload and lay it on trays on the ground to dry in the hot sun. In a few days this will be dried fruit that can be kept all winter.

When dry, the fruit is packed in boxes and sold. It goes to people who live three thousand miles away at the other side of the United States, or six thousand miles away in Europe. Many thousand carloads of oranges, lemons, plums, pears, grapes, and dried fruit go every year from California to other states. In return the people of sunshiny California get carloads of automobiles, clothes, books, and other things made in eastern factories, and sent out to them to pay for the fruit that their sunshiny state has produced.

135. Why the winter on the Pacific Coast is warm.—It is a fine thing for the people of the United States that we have this Pacific Coast region where, in the warm winters and dry summers, so much fruit can be grown for people in the other states. Do you wonder why this region is so much warmer in winter than the states to the east of it? The reason is that on the Pacific Coast the winds blow from the west and southwest. On their way to the coast they have become very warm, because in this latitude the ocean is warm all winter. Thus they bring warm air to the orange groves. From Seattle to San Diego, roses are often in bloom when Chicago lies deep under the snow, and when the Michigan lumberman is hauling great loads of logs on his sled. When the boys and girls of New York and Pennsylvania are coasting and skating on their way to school, the children of California are picking flowers and gathering oranges.

136. Old World fruit districts.—These wonderful fruit-growing districts of ours are not the only ones in the world. In every continent there is a place like California where fruit is grown and dried.

Europe has the largest fruit district and fruit industry of the world. Along the Mediterranean Sea several countries have the same warm winters and rainless summers as California. Turn to Fig. 315 and name three countries that reach into the Mediterranean Sea. Most of the vines and trees used in starting our California fruit industry came from Southern Europe. For hundreds of years, the people in these old countries have had orchards of oranges and lemons and other fruits. At the end of their dry summer, these European people ship boxes of dried apricots, dried prunes, and raisins to England, to Norway, and to other countries where the winters are too cold to grow such fruits.

Steamships for the fruit trade call at port cities in Palestine (Fig. 444), Asia Minor, Greece, Sicily, Spain, and Portugal. (Fig. 315.) These steamships do for the fruit growers on the Mediterranean the same things our freight trains do for the fruit growers on our Pacific Coast. They take the crop to market in the colder countries of Europe, and bring back from factory towns the goods the fruit grower wants in his home and in his orchard.

Before the railroads had given California



Courtesy of the Phila. Commercial Museum

Fig. 140. A scene in a packing house, Redlands, California. Oranges roll on belts, and sort themselves by dropping through holes of different sizes.



Fig. 141. Apricots drying beside the orchard, Riverside, California. Which is easier, drying fruit this way or putting it in a dryer and making a fire? See the fruit trees and the packing sheds.

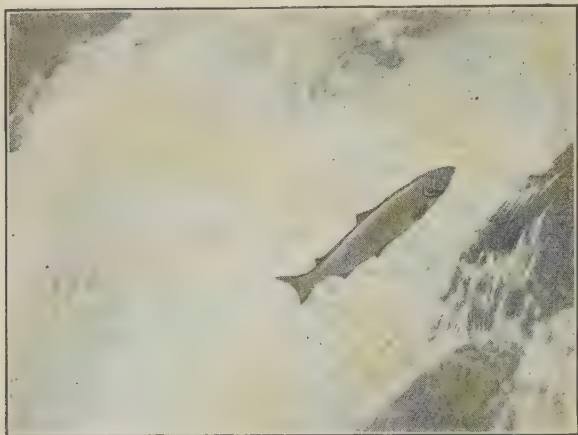


Photo. Brown Bros., N. Y.

Fig. 142. Mother Salmon leaping a waterfall.

a chance to supply Chicago, New York, and the East, the people of this country bought most of their prunes and raisins from Europe. Now California and Oregon grow such large quantities of these fruits that we export some to Europe.

On the Pacific coast of America as far south of the equator as Los Angeles is north of it we find another fruit district like California. In what country is it?

QUESTIONS

1. What trees around your home keep green all winter? What trees drop their leaves? How about the apple? the cherry? the spruce? the fir? the orange? 2. What would you like to see in southern California? 3. Why are there so many Spanish names there? 4. What trans-continental railroads run from California eastward? By what route would California oranges reach St. Louis? New Orleans? 5. How would oranges from Florida reach New York City?

6. Why do oranges travel better than peaches or plums? 7. What do the orange growers say when they see a good deal of snow on the mountains? 8. Notice how the mountain sides are gullied and worn by melting snow and the rain. (Fig. 138.) Why do we not see such things on eastern mountains?

9. Many lemons come to New York City from Messina and Palermo. Oranges grow around Genoa and Naples. Figs come from Smyrna. Find these Mediterranean cities. 10. Which is farther south, the southern boundary of California, or the southern tip of Florida, or Naples?

THE PACIFIC SALMON

137. The sea salmon.—The Mother Salmon is a fish that lives most of her time in the salt sea, but she lays her eggs in cold fresh water, in a place far from the sea. In the summer time it is hard to find such a place out of doors, but Mother Salmon knows where to look. There is cold fresh water in streams high up in the mountains; these streams flow down from melting snows and glaciers. Sometimes these streams are a thousand miles from the sea, so it is a long, hard journey, a thousand miles up the river, to the little stream in the mountains, but that is where Mother Salmon has to go to deposit her eggs.

In the summer a great number (school, we say) of big, fat salmon swim from the Pacific Ocean up into every river on the coast, from San Francisco to the Arctic Ocean. In one river they swim around a certain island near its mouth, and two miles up they cross over to the other side, as carefully as a man driving a wagon would follow the road. In that river they always follow that path. Upstream they go—on and on. They swim through rapids. They jump up waterfalls. Sometimes they fall back and are cut by the rocks. Some are killed. White men catch them; Indians catch them; bears catch them; wild cats, hawks, and eagles catch them. Those that live become thin, but still they swim on! At last, after many weeks, Father and Mother Salmon reach the mountain streams. There, not long after the eggs are laid, the parent fish die. None of the salmon that swim up to the sources of the rivers ever go back to the ocean.

138. The little salmon go to the sea.—It is the little salmon that go back to the

sea. When they are hatched in the cold water, they are no bigger than little pieces of match sticks. They have a rather hard time of it as they work their way downstream. A great many of them are eaten by the hungry river fish they meet. Many of them go off into irrigation ditches and perish on the dry ground of the fields. Those that reach the sea, months later, have grown to be about as long as your finger. But in a few years they have become as long as your arm, and then they join the great school and swim back up the river as Mother Salmon did.

139. The Indian smoked salmon.—It is easy to catch the salmon when they come in such crowds. The Indians in Alaska go out in their canoes and in a short time spear enough to fill a boat. They then dry the fish by smoking them over the campfire, and put them up in a *cache* (pronounced *cash*), which is a little wooden house on poles, out of the reach of dogs and wolves. Here they are safe until winter, and the Indians may go off berry-picking and deer-hunting in the late summer and early autumn. The Indians of the interior must have dried salmon for themselves and their dogs. Very often there is nothing else for them to eat.

140. Canned salmon.—White men have learned how to keep salmon fresh in tin cans. Canned salmon is much better than is the Indians' smoked salmon, which is said to taste like an old shoe. There are large fish-canning factories on Puget Sound and Columbia River, on smaller rivers in Washington and Oregon, and on the Yukon

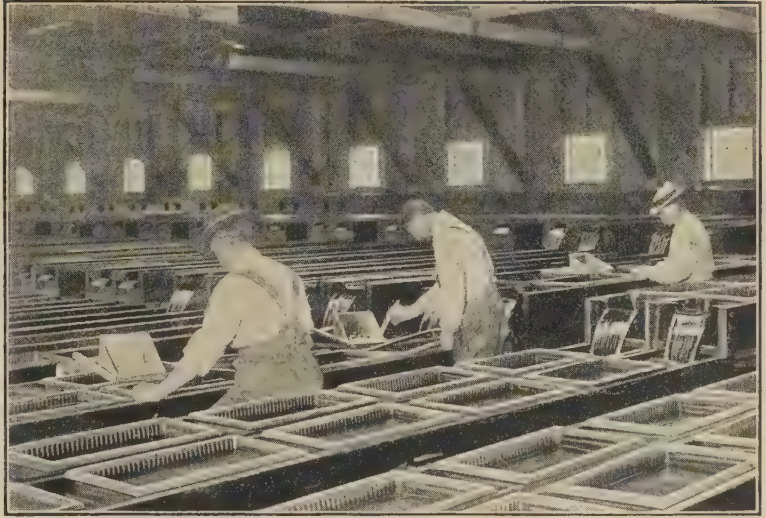


Fig. 143. An interior view of a salmon hatchery, Battle Creek, California. See the vats of clear running water.

Photo. Brown Bros., N. Y.

and other rivers of Alaska and British Columbia. In summer the factories are busy, but they are closed the rest of the year, and often only watchmen remain in winter. On the Bering Sea shore of Alaska it is too cold for farms, and in British Columbia and south Alaska there are not very many farms. At Juneau and at the mouth of the river Skeena, the shore is so mountainous that there is barely enough level land for buildings to be built. This is no place for many people to live. Therefore, at salmon time, a ship loaded with workers and tin cans sails up to the cannery. For a few weeks after the ship arrives at the cannery, the people are very busy at work preparing the fish and packing them into the cans. Then the canners sail away with a shipload of fine canned salmon. It is one of the chief products of Washington, Oregon, Alaska, and British Columbia, and it is sold in most grocery stores in the United States and the world.

141. Raising little salmon.—Men have learned two very interesting and useful things about salmon. One is that the big



fish come back from the sea and go up the rivers where they were born. The other thing is that men can now raise salmon as easily as we raise pigs or chickens. The eggs are taken from the bodies of the Mother Salmon at the hatcheries and put into troughs of cold water, where they hatch. After the little fish are hatched, they are kept in ponds and fed all summer and then let loose to go out to sea, where they will grow big. The United States Government operates many fish hatcheries, so that the people of the country may have more fish to eat. In the Bureau of Fisheries at Washington, D. C., learned men spend all their time studying the habits of fishes. Through this study they learn how to raise more fish.

QUESTIONS

1. What troubles may the salmon meet as they go up the rivers? 2. Do you think their spring journey would be more dangerous than that of the birds which come north every year? What enemies do the birds have? What accidents may happen before the young birds fly?
3. Why is the salmon such good food for the Alaskan Indian and his dog? 4. Where does the Eskimo get his fat, oily food?
5. What do you eat that contains fat or oil?
6. Locate the Columbia and Yukon rivers and Mt. McKinley. 7. What industries besides the fishing industry does our government help?



Photo. Doubleday Page Syndicate, N. Y.

Fig. 145. Salmon fishermen on the Columbia River. Where did these fish grow?

GENERAL VIEW OF THE PACIFIC STATES AND ALASKA

142. A wonderland.—The Pacific States are a wonderland to people who have lived all their lives in the eastern part of our country. In California, one may look up from the orange orchards, yellow with fruit and sweet with blossoms, and see snow-covered mountains shining in the sun. In California also we may see the largest trees in America and the highest waterfalls; forests where the deep shade is green with ferns, and treeless deserts bare and glaring under the burning sun.

Many thousands of people from the Eastern States and from Europe go to the Pacific Coast every winter to enjoy the mild weather, the flowers, the orange trees and the palms, and to be away from the storms of the East. Even as far north as Alaska, the winters are mild near the ocean. The summers are also pleasant, for ocean breezes keep the land near the ocean from becoming too warm.

143. The mountains and the rain.—There are many beautiful, forest-covered mountains in each of the three Pacific States. (See Fig. 147.) The mountains near the ocean are called the Coast Range.



Photo. Brown Bros., N. Y.

Fig. 146. Preparing salmon for canning, Puget Sound. Where will these fish be eaten?



Courtesy of Rainier National Park Co., Tacoma, Wash.

Fig. 147. Magnificent trees in the dense forest of Rainier National Park, Washington. What signs of moist climate do you see?

Farther east is a higher mountain system consisting of many ranges with some high peaks. This is called the Sierra Nevada Range in California; in Oregon and Washington, the Cascade Range. One of the peaks is Mt. Lassen the only active volcano in the United States. The moist winter winds from the Pacific Ocean blow against the western sides of the mountains, dropping much rain there before the eastern slopes get any at all. Thus these mountains have heavy rains on the western slopes. Look at the rainfall map. (Fig. 88.) While the western slopes are covered deep with damp forests, the dry eastern slopes of the Sierras and Cascades are bare. The higher parts of these mountains are thousands of feet above the valleys at their base, and by the end of winter are covered with snow five or ten feet deep. But in spring and early summer, just at the time when the farmers in the valleys below need the water to irrigate their orchards or

fields, the snow melts and leaves the mountains green again. Where else have we seen such a thing happen? (Sec. 127.) If these mountains were not there the people could not grow crops in the valleys.

The finest forests in the world are on these mountains. You read about them in Section 96. The very moist climate near the Pacific makes the forests along the coast from northern California to Alaska always green, and often the ground is covered with a thick growth of ferns. This part of the United States has more rain than any other

part. It is in the northern part of these wet forests that we find the Sitka spruce trees with the strong light wood so useful for airplanes. With them are the big fir trees known as "Oregon pine." These spruce and fir trees grow most abundantly in Oregon, Washington, and along the coast farther north into Alaska. In California, the redwood is one of the leading trees.

144. The land of little rain.—East of the Cascades, where there is little rain, trees are rare, except on the mountains, and in some places there is not enough water on the high plains for the sheep to drink. This is a part of the sheep country about which we read. (Sec. 111.)

The part of California east of the mountains is in the Great Basin. (Sec. 40.) Some of this is a real desert, and terribly hot in summer. You might go a hundred miles across it and never see a person. One part of southeastern California is called Death Valley because so many

people have died of thirst as they tried to find the gold that is known to be there. Farther south, in a region called Imperial Valley, the desert is being irrigated with water brought from the Colorado River, after it flows out of its great canyon. (Sec. 130.) Here the truck farmers raise cantaloups that ripen in June, and are sent all over the United States before they are ripe in other places.

In many places in California, pipe lines have been built and water brought great distances from mountain streams to irrigate orchards, lawns, and parks, as it seldom rains at all between April and October. It is warm there in winter, and cool in

summer except at midday, so that people can work and play out of doors at all seasons. A great many eastern people go to California in the winter time to see roses, oranges, and green things growing, while it is still snowy and cold in the east.

145. National parks.—In the dry summer, many people from the Pacific Coast cities take vacation trips in the mountain forests. Many of



Photo. H. C. Tibbitts
Courtesy of National Park Service
Fig. 148. A picture of a big city church beside a picture of the famous redwood tree called "Grizzly Giant." Yosemite National Park, California.

these forests are owned by the United States Government for the benefit of all the people. Some of the most beautiful parks have been set aside as national parks. In-



Photo. U. S. Forest Service

Fig. 149. The far-famous Yosemite Valley. The high white cliff, called El Capitan, is about 3600 feet high—over half a mile. Do you see any difference in the number of trees here and in Fig. 132?

stead of giving the land to people to cut timber or make farms, it is made into parks which shall be playgrounds for all the people for all time. In one of these, Sequoia National Park, we find the largest trees, the giant Sequoias. (Fig. 148.) Some of these were good-sized trees two thousand years ago. In Yosemite Park, another of the national parks, northeast of Sequoia Park, is the beautiful Yosemite Valley, with its wonderful cliffs and waterfalls. (Fig. 149.) This is one of the deepest valleys in the world. The Yosemite River plunges down into it making a waterfall that is fifty times as high as a two-story house. This valley is one of the great sights of the world. Find these parks on the map. (Fig. 137.) Find also Mt. Rainier in Washington. This beautiful mountain has



Courtesy of Yakima Valley Commercial Club, Wash.

Fig. 150. Yakima Valley, Wash., now irrigated, was once almost as bare as the hills beyond it. What mountains furnish the water for this valley? What is grown here?

been made the center of another national park, which is named after the mountain.

Many of the people in Oregon and Washington can look out from their homes and see the snow-capped peaks standing above the dark green forests. It is a wonderful summer trip through the cool woods along the dashing mountain streams to the snow fields and glaciers. The United States Government has built many roads and trails in the national parks to make it easy for us to see these wonders of nature.

146. The great valley.—Between the Coast Range and the Sierra Nevadas is the Great Valley of California. Millions of years ago, this valley was a big gulf like the Gulf of California. During many centuries, the swift running streams on the steep mountains beside the great gulf kept washing the earth away, and cutting deep valleys or canyons in the mountains. The streams carried this earth down into the gulf and thus filled it up, until at last there was solid land where once there was

only water. A little part of the gulf remains. It is called San Francisco Bay. The rest of the old gulf between the two ranges of mountains is now a wide, nearly level plain, covered with the soft, rich, fine soil that the water brought down from the mountains. This Great Valley is a very good place for tractor plows to work, and the farmers there easily raise fruit, wheat, barley, rice, alfalfa, and vegetables, although most of the land is too dry for farming without irrigation.

(Fig. 138.) The streams

which come down from the mountains unite to form the San Joaquin and Sacramento Rivers. These furnish much water to irrigate the valley fields and orchards.

147. Other valleys.—Near the eastern



© Underwood & Underwood, N. Y.

Fig. 151. A machine that cuts, threshes, and puts into sacks the wheat on the rolling fields near Spokane, Wash. Find the sacks of wheat.

slope of the Cascades are two beautiful valleys, the Hood River Valley in Oregon, and the Yakima Valley in Washington. Both of these valleys are famous for their irrigated apple orchards. (Fig. 150.) West of the Cascades is a splendid valley, in Oregon, called the Willamette Valley. Compare it with the California valley (Figs. 137 and 88).

148. Wheat.—It is in the Columbia River basin that we find one of the wheat districts mentioned in Section 79. Its trade center is at Spokane. This country is not flat and level like the wheat regions of the Dakotas and Canada, or like the Great Valley of California. It is a wide sea of rounded hills. At harvest time it is wonderful to see twenty or thirty horses swinging the big reapers around the hills, cutting down the yellow grain.

Some of this wheat now goes by steamboats down the Columbia River to Portland, where the ocean steamers wait for it. There are rapids and falls where the great



Fig. 153. A fishing fleet in Seattle harbor. Through what sound will they sail? What mountains lie to the west? What famous mountain peak can the fishermen see to the east?

river flows through a notch it has cut in the Cascade mountains. Here the United States Government has built a canal having locks, so that the steamboats can pass around the falls as they do around Niagara.

149. Gold and oil.—You remember the Forty-niners (Sec. 126), the men who went in the year 1849 to California, to find gold. Besides gold, California now produces a great deal of petroleum, which comes from

the southern part of the state. Some of the oil is sent away in ships. It is also used for fuel in locomotives, and in the factories of California cities.

150. Trade.—Most of the people in the Pacific States live in a few small sections of this large region. Compare the rainfall map and the population map of the United States and see if the regions where people do not live are also regions of little rainfall.



Photo. Doubleday, Page & Co.

Fig. 152. Knocking down almonds; Stockton, California.

What parts of these states have few people because the land is mountainous? Only one railroad connects the states of California and Washington. Much of the trade between these states goes by sea. Traveling by boat is always cheaper than traveling by train, and for this reason many lines of steamboats carry goods and people from city to city along the coast.

There are not many good harbors along the Pacific between Mexico and Canada. A harbor is a place where the sea comes into the land in a long, deep arm. Here the water is quiet and big ships can anchor where no waves will drive them against the shore. San Francisco Bay, Puget Sound, and the Columbia River are good harbors that can easily be reached from the land, because the Coast Range is broken at these places. At Los Angeles men had to make a harbor by building a long stone wall, or jetty, to hold back the waves and make quiet water.

Steamships regularly go across the Pacific Ocean from San Diego, Los Angeles, San Francisco, Portland, and the cities on Puget Sound. They carry lumber, cotton, oil, fruit, and manufactures to China and Japan. They bring back tea and silk, some of which goes across the mountains to the cities in the eastern part of the United States. Ships carrying fruit and lumber also go regularly to Australia; and by way of the Panama Canal to our eastern cities and to Europe. There is a great rivalry between cities such as San Francisco, Seattle, and Los Angeles, as to

which will have the largest trade. Each of these cities has large ship-building yards.

151. Alaska.—The Pacific Coast cities have an important trade with Alaska. This territory, which is nearly as large as all the North Central States, was the first piece of land that we bought outside of our own country. Many people laughed at Mr. Seward, Secretary of State, when he bought it for the United States from Russia in 1867. They said the climate was too cold for the country to be of any use. But now every year we get millions of dollars' worth of gold, fish, and fur from Alaska.

Alaska is a very different place from the United States. Most of it (Fig. 59) is so cold that few farmers have gone there. The interior is very cold indeed in winter. The part of it near the Bering Sea and the Arctic Ocean is the country of the Eskimo, and much of the interior is the country of the Indians about whom we read in Section 6. The southern part is much warmer.

This warm part of Alaska has much rain and many thick evergreen forests. It is also very mountainous. In some places the mountains come down so close to the sea that there is scarcely room between the sea and the mountains for a man to stand. At the town of Juneau, there is barely room enough for a few streets at the foot of the steep mountains. Few people can live in a country like this. Altogether there are not as many white people in all Alaska as there are in the city of Omaha, Nebraska, or in Pasadena, California.



Courtesy of Spirit of Missions, N. Y.
Fig. 154. Alaska forests in winter
and part of a dog team.

Those who laughed at Mr. Seward for buying Alaska for the United States were very much mistaken, even if few people do go there to live. The salmon (Sec. 140), gold (Sec. 122), and furs that have come from Alaska have, each of them, been worth many times the \$7,000,000 which the United States paid for the country. There is one gold mine on an island near Juneau where hundreds of miners have worked for many years, and will work for many years more. There are also many mining settlements on the Yukon River and its branches.

152. The trade of Alaska.—To supply these people with goods, ships from San Francisco and Seattle go to St. Michael, near the mouth of the Yukon. There the freight is taken

by river steamers to many mining camps, and finally reaches Dawson and Whitehorse in Canada. Some ocean steamers go to Skagway on the south coast. A short railway carries goods from this port to Whitehorse on the upper Yukon. Other ocean steamers land freight at Seward, from which port it is carried by the government railroad to Fairbanks.

153. The seal islands.—Out in Bering Sea are two little rocky islands, the Pribilof Islands. Here thousands of fur seals come every summer to rear their young. The United States Government owns these islands and has men there all the time to keep hunters from killing the seals for their fur. Only a certain number may be killed

each year, and no one may catch seals except the company which has a permit from the United States Government.

154. Reindeer.—The coming of the white men was at first very bad for the Indians and Eskimos of Alaska. The white men were killing off the game, and the natives were about to starve. Then the United States Government, wishing to save its Eskimos from starvation, sent men over

to Siberia to get reindeer. These are wonderful animals. They can live on the moss and the grasses that grow in this country where it is too cold for trees or farms. With their sharp hoofs they dig away the snow and get at the moss beneath it. They give milk. They have been tamed by the people of Siberia and

the people of Lapland. (Sec. 349.) Their meat is good to eat, and their skins make warm clothes. Men can ride on their backs and hitch them to sleds. Our government hired people from Siberia and from Lapland to come over to Alaska and teach the natives how to raise reindeer. The Alaskan Eskimos are now good reindeer herders, and are much better off than the Eskimos farther east and north who have no reindeer. (See Secs. 1 to 3.) All this has made the Alaskan Eskimo richer than he was, and he is glad the white man came. This plan of the Government was certainly much better than driving the Indians and Eskimos away from their homes, as white people have sometimes done.



Photo. U. S. Bureau of Fisheries

Fig. 155. Seals on the shore of one of the Pribilof Islands, Bering Sea.



Photo. Brown Bros., N. Y.

Fig. 156. Loading lumber on Pacific ships at one of the big mills on Puget Sound. Where do you think these ships will go with the lumber?

155. The Panama Canal.—When the Panama Canal was built it was a great help to the people of the Pacific States and Alaska. Before this time, the people on the Pacific Coast had had a great deal of trouble sending their goods to market. There were two ways of doing this. The more costly way was by railroad, a long, hard journey over the mountains and across the plains. The other way was by ships that went all the way around South America. This did not cost as much as the railroad journey, but the trip took several months.

The need for a shorter trade route made men begin to plan a canal across the Isthmus of Panama. Finally, in 1902, the republic of Panama gave the United States a strip of land five miles wide (Canal Zone) on each side of the proposed canal route. The engineers of the War Department made careful plans for a canal with locks. Then for eleven years thousands of men worked on the canal. Some were white men from the United States, but most of

them were black men from the West Indian Island of Jamaica. They used steam shovels, dump cars, dynamite, and many other things. By 1914, big ocean ships could go into the locks, be lifted up higher than a housetop, and sail along where wooded hills had been a few years before.

This route made the journey from the Atlantic to the Pacific much shorter than it used to be, and many ships now cut off thousands of miles of their journey by going through the canal on their way from New York or New Orleans to eastern Asia, western South America, and western North America. The President of the United States sends to Panama a governor who rules over the Canal Zone.

QUESTIONS

1. If the white men catch too many fish for their canneries, what will the Indian and his dog eat?
2. How would a warm current like the Japan current flowing by Labrador make the fishermen's lives easier?
3. Where did the moisture come from that is lying on the mountains as snow (Fig. 138)? What wind brought it?
4. Why is the northwestern part of this group the rainiest region in the United States?
5. What occupation of the western slopes of the Cascade Mountains is not found on the eastern slopes? Why? (Consult Fig. 107 before reply-

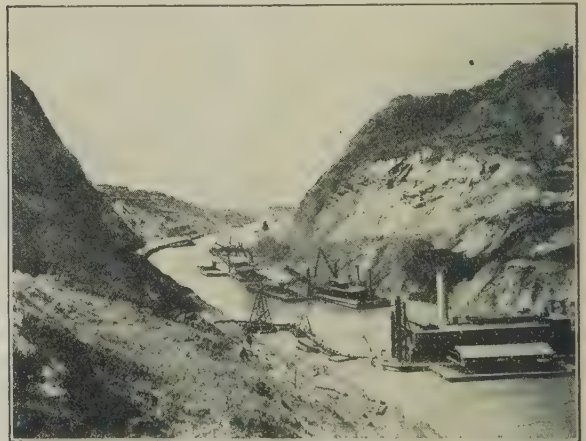


Fig. 157. Dredges at work digging the deep Gaillard cut in the Panama Canal. Some mud was carried out in the barges; some pumped out in the big pipes.

ing.) 6. List the foods in your grocery store that come from the Pacific States. Try to find the routes over which they come before they reach your grocer.

7. Why have so many people moved from the eastern part of the United States to the Pacific States? 8. Find out on the globe what continent you are near when in Alaska. What sea lies between it and Alaska? 9. Name the small islands in this sea which the United States owns. Why are they valuable? 10. Name a seaport on each of the largest harbors of the Pacific States. In which state is each? 11. From what body of water does the wind come which brings rain to your home? In what direction is it? 12. Find your home on the rainfall map (Fig. 88). How much rain falls there during the year? Is it more or less than at New Orleans? at Denver? Does it fall in one season as in southern California, or does it come all through the year?

13. Why did many people think the United States should not buy Alaska? 14. What is a national park? Of what benefit is it to the people of the United States? 15. Write a short story about a California raindrop, telling how it went from the sea to the mountains and back again.

GENERAL QUESTIONS

1. Name and bound each of the Pacific States and Alaska; give their capitals. 2. Draw a map, free hand, showing the boundaries of the states and the locations of the principal cities. 3. What group of states touches this group? (See map Fig. 63.) 4. List the principal things that the people of these states have to send to other states. Also list the things they need but do not produce. 5. List the things that you get from these states. 6. Do you think your neighborhood produces some things that are not produced in the Pacific States or Alaska? What are they? 7. Name some things that one part of the Pacific States may be sending to some other part. Why would people do this? 8. Can you make, in clay or sand, a model of the Great Valley of California?

NOTE.—Attention of teachers is again called to the Manual to be used in connection with this book. See foreword for teachers, in the front of this book.



Fig. 158. Picking cotton in Alabama. Often the plants grow much higher than those in the picture.

Photo. International Film Service

THE SOUTH CENTRAL STATES COTTON AND DELTAS

156. The uses of cotton.—Most of the boys and girls in your class are wearing as a part of their clothing something from the South Central States. It is cotton. Most of the clothing worn by the people of the United States, and of Europe too, is made of cotton, although some of our warm winter clothing is made of wool. Men's and boys' suits and overcoats are usually made partly or entirely of wool.

Thousands of farmers in each of the South Central States except Kentucky sell nothing but cotton, just as farmers in Kansas or North Dakota sell nothing but wheat. The long hairs or fibers of the cotton plant grow in a seed pod called a boll, and are stuck fast to the cotton seed. When the seed is ripe the boll bursts open and the white cotton is ready to pick. Cotton is like wool in that it is easy to twist its fibers into yarn, which can then be woven into cloth. Can you twist a rope of dry grass, hay or excelsior?

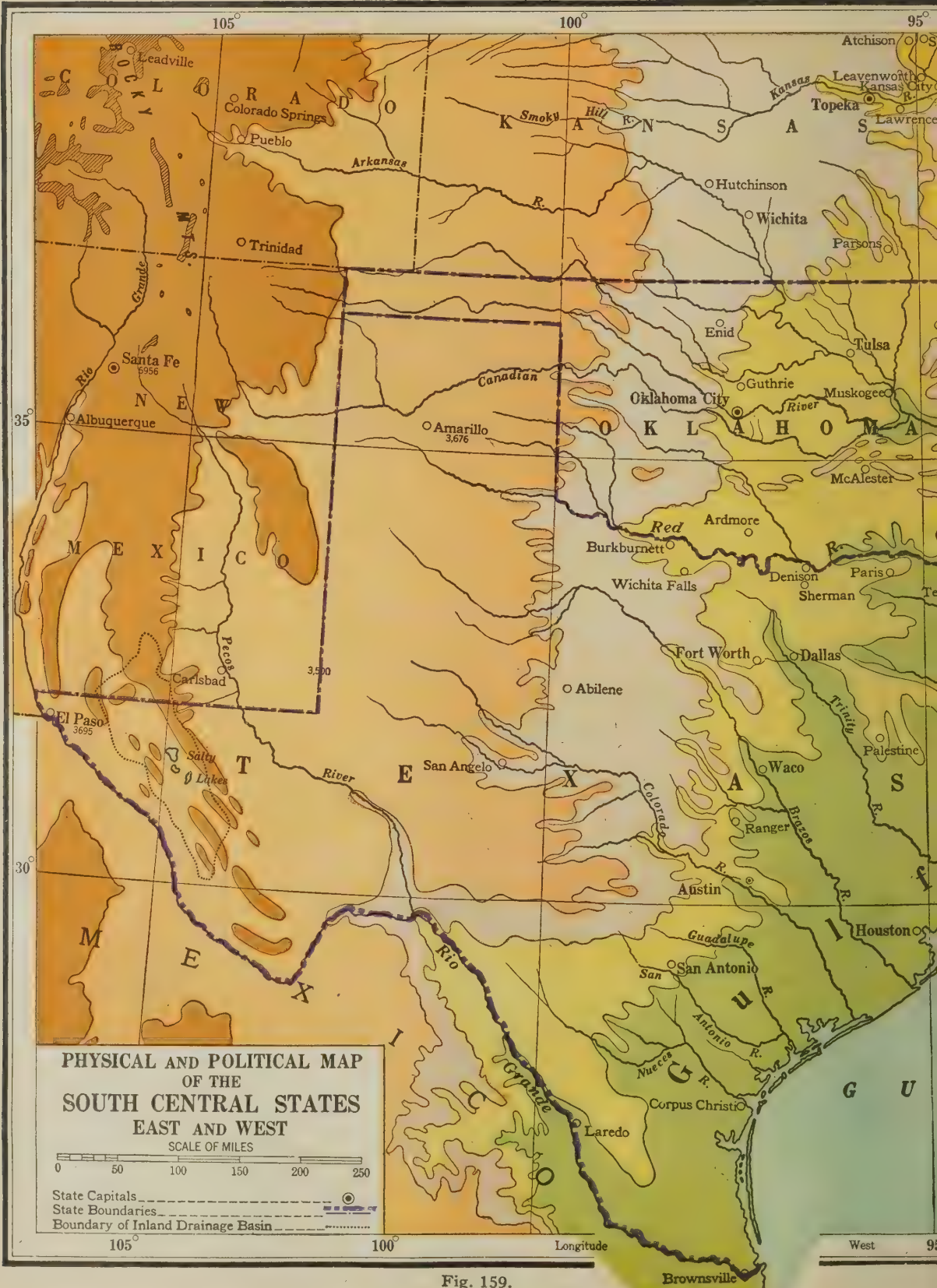


Fig. 159.

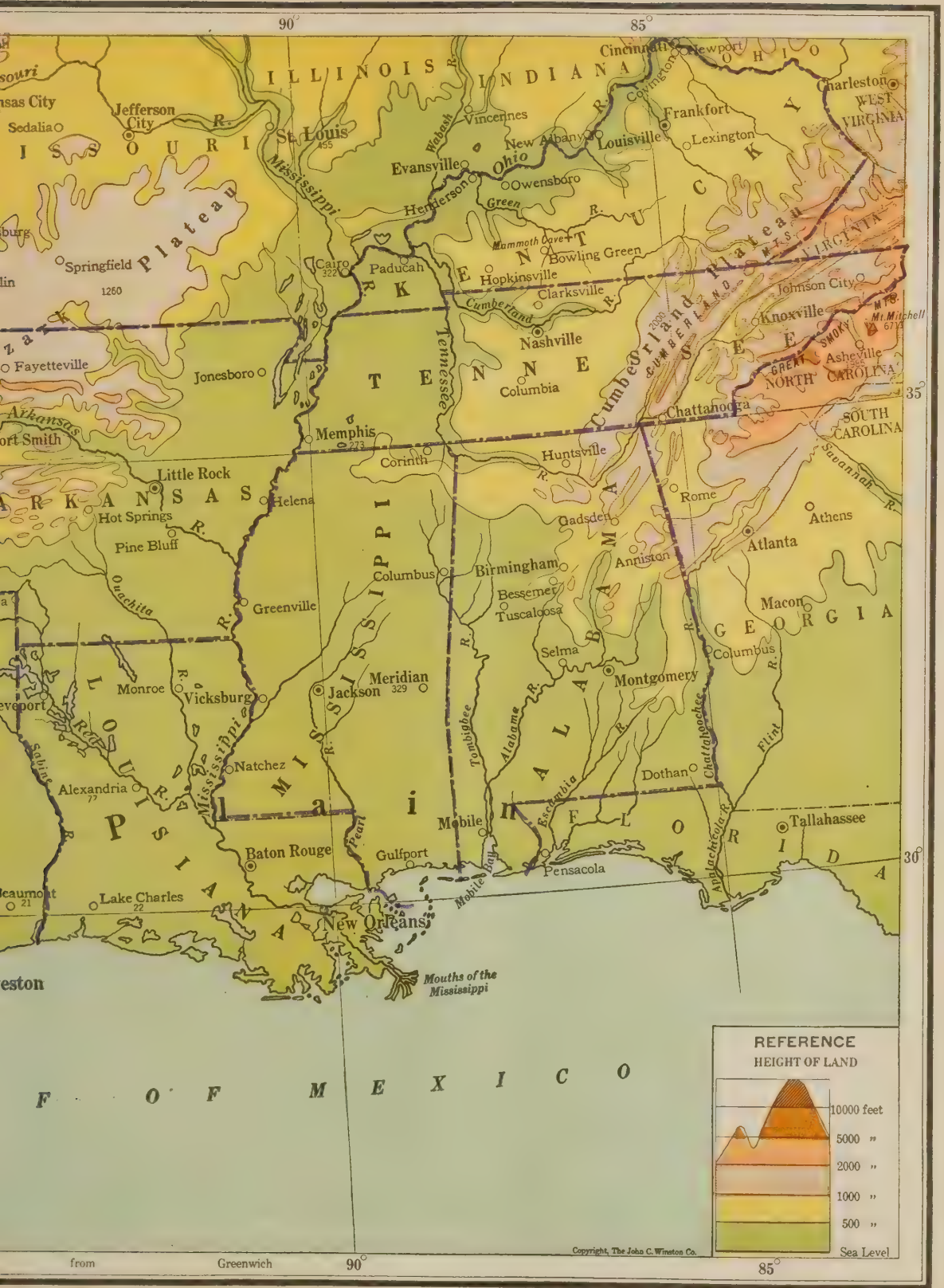


Fig. 159.



Photo. U. S. Dept. Agr.

Fig. 160. Cotton fibers sticking to a cotton seed. Why is the cotton gin important? A person can pull by hand only a pound of cotton from the seeds in half a day.

157. Growing cotton.— In the early spring the cotton grower plows and harrows his field as he would for corn or wheat. (Sec. 63.) Then he plants the black seeds in long rows across the field. When the young plants peep through the ground, many weeds come up with them. Then the farmer and his boys, and sometimes the girls too, take hoes and chop out the weeds that are close to the little cotton plant. They also thin out the cotton plants so that each one will have room to grow. The weeds between the rows are kept down by plows drawn by horses or mules. It is a busy job to keep the weeds out of the cotton, for weeds grow very quickly in the warm, moist weather of the South Central States. There must be no frost for seven months between the planting and ripening time, or the cotton will be spoiled. For this reason, cotton is not grown north of the warmer parts of Tennessee and the southern edge of Virginia.

158. Picking and marketing cotton.— In the late summer and autumn, the cotton is ready to pick. This is the busiest time of all the year in the cotton region. Men, women, boys, and girls, go along the rows picking the fluffy white fiber from the plants by hand, and putting it into the long bags which they carry over their shoulders. The cotton does not all ripen at once, so the picking lasts for weeks. Wagons haul

the full bags from the field to the gin house, where a machine (cotton gin) pulls the cotton lint (fibers) away from the seeds. Next it is put into heavy presses and squeezed up tight into bales, so that it will not take up so much room. When baled, the cotton is ready to sell, and the farmer hauls it to the railroad station or to the boat landing.

Some southern cotton is grown on large farms called plantations. These are often divided up into many parts, each of which is rented by a tenant. These tenants may be either white men or negroes.

A bale of cotton is worth a lot of money. Find out from some newspaper the price of cotton, and the value of a five-hundred-pound bale of cotton. With a few wagon loads, the farmer can pay many bills, and buy the things he needs to last him and his family until he sells his cotton the next year. If the price of cotton is high, the farmer feels rich, but if it is down a few cents a pound he feels poor.

The cotton map (Fig. 163) shows that cotton is grown also in the South Atlantic States, where the climate is much the same



Photo. U. S. Dept. Agr.

Fig. 161. Cotton bolls: one closed, the other open.

as in the South Central States. (See Figs. 64 and 88.)

159. Cotton trade and cotton in other countries.—There is more cotton grown in the United States than in all the other countries of the world. Much of it is sent away to the peoples of other countries. Freight trains and the steamboats carry it to the ports of Galveston, New Orleans,

Mobile, Savannah, Charleston, and Wilmington. From these ports, steamships carry it over the sea to our own northern states and to many foreign countries. The chief countries that buy cotton from us are England, France, Germany, and Japan. Besides exporting cotton to nearly every country in the world, the United States also brings in some cotton from Egypt.

This is because the very dry air of that country makes Egyptian cotton different from that of our southern states. The fibers (see Fig. 160) are longer, and can be twisted into stronger thread. We are now growing in this country some Egyptian cotton in a place that is sometimes called the "American Egypt." This is in the Imperial Valley, California.

The only other country besides Egypt that has much cotton to sell is India, in Asia. On the plateau near Bombay there is a black soil, very rich, which holds water so well that cotton thrives with only a little rain. The people of China also raise much

cotton, but they use it all for their own clothes. There are so many people in China that they buy some cotton from the United States and India. (Fig. 166.)

160. Cottonseed oil and oil cake.—For a long time, the American cotton farmers threw away the cotton seed that they did not need for planting. Then they began to use it for fertilizer. At last someone

found that oil could be pressed out of the seeds, and that the oil was good to eat. Cottonseed oil mills are now to be found in many towns and cities from Texas to North Carolina, and cottonseed oil is sold at grocery stores. It may be found in salad oil, soap, oleomargarin, lard substitutes, or even in boxes of sardines.

The cake, or that part of the cottonseed that is left after

pressing out the oil, is ground into a kind of meal, which is one of the richest foods for cows and sheep. It is sent to the dairy farms of the northern states and to Europe.

161. Cotton on the Mississippi Delta.—

The cotton map shows that a great deal of cotton is grown near the Mississippi River because the soil is good for cotton. It is delta soil, brought there by the river. Nearly every boy and girl has seen a delta without knowing its name. Have you not seen little rivulets that form during a hard rain and cut gullies two or three inches deep in the edge of a road, field, or lot? Farther down, water may run into a little



Photo. U. S. Dept. Agr.

Fig. 162. A cotton boll showing the boll weevil worm, which feeds upon the cotton fibers while they are growing, but will not eat them when they are dry.

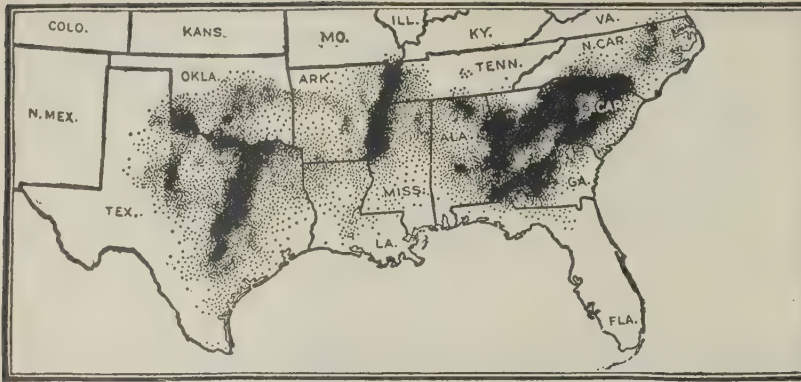


Fig. 163. Map showing where cotton is grown in the United States.

bars away. Down at the mouth of the river they may form again in the Gulf. The sandbars that are under the water when the river is high are islands when the water is low. Every heavy rain helps the river to bring down a little more sand and mud, so that the delta is always growing.

pool, and the earth it carries is spread out like a fan. (Fig. 164.) This fan of earth is called a delta, because it is shaped like the letter delta (Δ) in the Greek alphabet. You may even see little deltas at the side of a paved city street, where the rain water has piled up on the pavement or in the gutter the dirt it has gathered.

On the steep hills, or in the fields, the rain water cuts channels and carries much soil down to the larger streams. Farther down, where the water of the big river flows more slowly, it drops the sand and mud and builds a delta. Many rivers have deltas which they have thus built. At first the delta may be only a small island or two in the mouth of the river. But each year it grows, for the floods make the rivers carry much sand and mud.

The water of the Mississippi River is always muddy, and every year it carries down to the Gulf of Mexico more mud than could be put into all the freight cars you ever saw. Steamboats on this river often get stuck on sandbars that are built up in the channel over night. But the current soon carries the sand-

Tiny bits of earth that have been carried from the far-off bare peaks of the Rocky Mountains and the Appalachians have helped to make this delta. You see now how a delta may become so large that it may have many farms, towns, and even large cities upon it.

The delta of the Mississippi (Fig. 165) now reaches far out into the Gulf of Mexico, and the river adds a mile to it every sixteen years. Ages ago the gulf reached up to the mouth of the Ohio River, but the rivers have filled it in hundreds of feet deep, and have made a soil so very rich that men can grow cotton on it year after year. Delta soil is nearly always good for cotton. Most of the Egyptian cotton is grown on



Photo. U. S. Dept. Geol. Survey.

Fig. 164. Here is a picture of a small delta not much longer than an umbrella. See how the little stream has washed the soil away from the stones, and then spread it out like a fan. The stream is dry. When will it make the delta larger?

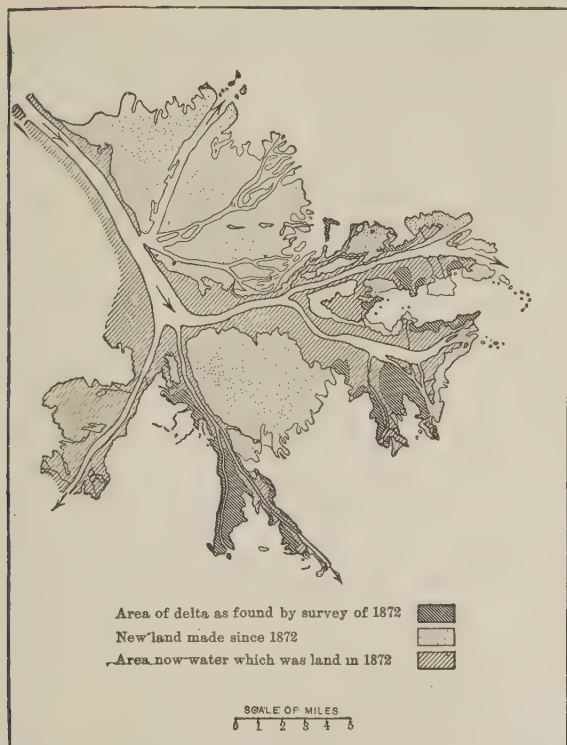


Fig. 165. Map of the Mississippi River delta which shows that since 1872 the river has brought down enough earth to make several square miles of new land.

the Nile delta, just as American cotton is grown on the Mississippi delta.

162. Levees.—For many years, the people along the lower course of the Mississippi River have been trying to protect their farms and towns from floods by building high banks, called levees, along the river. Sometimes the levees break, and the water covers the country for miles and causes great loss on the farms and in the towns. When levees break, men sometimes have to come in boats and take people out of the second story windows, or off the roofs of their homes, and carry them to places of safety.

But when the water goes down again, the ground is covered with a layer of rich mud which fertilizes the ground so that good crops will grow. For this reason the flood plains yield twice as much cotton to the acre as the uplands near by produce.

QUESTIONS

1. Can you make a tiny delta in a bank of sand, earth, or ashes, with a bucket of water? 2. If you like experiments, plant some cotton seeds in a pot of good earth, and try to raise a cotton plant. 3. If you have some cotton bolls in your school museum, ask your teacher to let you take a seed and pull the fibers from it. Are they easy or hard to remove? Can you twist raw cotton into a string? If you have never seen a cotton boll, address a letter, enclosing a stamped envelope, to the Superintendent of Schools of some city close to the cotton fields. He may see that some boy or girl sends you one. 4. Find on the map of the United States the states in which cotton grows. 5. Name six cotton ports of the United States. What bodies of water or rivers are they on or near? Follow the chart below:

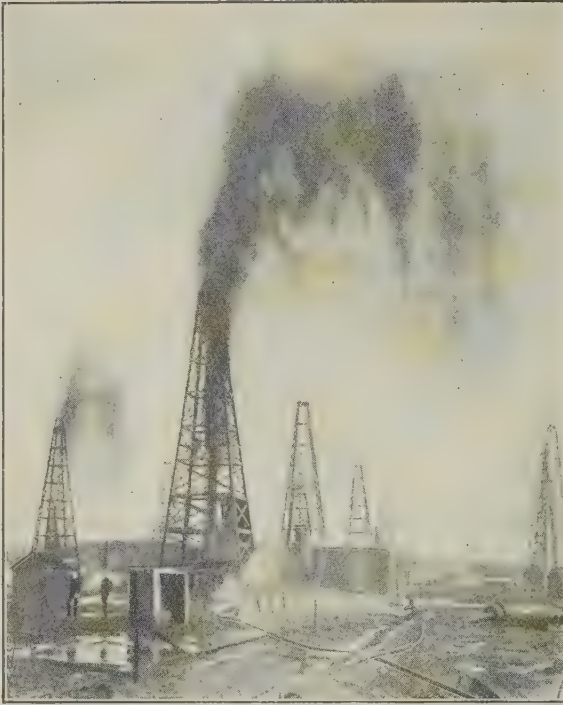
COTTON PORTS OF THE UNITED STATES.

CITY.	RIVER.	BODY OF WATER.

6. Why is cotton not grown in South Dakota? 7. What does the cotton plant need besides warm weather? 8. Why do some rivers overflow? 9. What



Fig. 166. Map of the world showing where cotton is grown. Can you find in Asia more than two cotton-growing regions?



Courtesy of Beaumont Chamber of Commerce, Texas

Fig. 167. An oil well called a gusher. The oil from two wells is spurting so fast that the men can only save it by letting it run into ditches on the ground. See the tanks and derricks.

cities on the Ohio and Mississippi would be likely to have floods? At what season? 10. Which cotton states border on the Gulf of Mexico? On the Atlantic Ocean? On the Mississippi River?

PETROLEUM

163. The uses of petroleum.—Every week several big steamships called tankers sail out of the Gulf of Mexico. They are full of oil, which is bound for Philadelphia, New York, and many foreign countries such as England and France. When we see the automobile whizzing past, or the airplane gliding far overhead, or think of the submarine diving under the sea, we should think also of the tank steamship with its load of crude petroleum. From this thick, dark oil the refinery makes gasoline for automobiles and engines, kerosene for lamps, oil for greasing machinery,

and many other useful things. The oil from the ports of the Gulf of Mexico helped run the motor trucks and the airplanes for the allied armies in the World War. It drives the tractors and harvesting machines which help to feed our own people and those of Europe.

164. Oil wells.—Petroleum is found in the rocks down deep in the earth. Men get it out by drilling a well until oil is reached, when sometimes the oil spurts out like soda water from a bottle.

165. Oil towns.—A single well will sometimes yield enough oil to make a man rich. His good fortune starts his neighbors to drilling wells. They may find no petroleum; but, if they do, a town may spring up as quickly as a mushroom. The town of Granger, Texas, had four hundred people when the first well yielded oil. Only a year later it had forty thousand people.

Sometimes oil towns are abandoned almost as quickly as they grow, for even the best oil well finally stops yielding, and the people leave the oil towns.

Sometimes natural gas comes with the oil. It will burn with great heat and is the finest fuel in all the world. Sometimes it is allowed to waste; sometimes it is carried in pipes to neighboring towns to make lights, to heat stoves, and to run engines. Enough good natural gas has been allowed to waste in northern Louisiana and in other states to heat all the houses in a city for many years.

166. Oil fields and pipe lines.—In recent years, people have been finding one oil field after another in Mexico, Texas, Louisiana, Oklahoma, and the part of Kansas near those states. After each discovery of oil comes a rush of people. Tents and shacks are put up in the fields. Wagons loaded with engines and pipes and

lumber come from the nearest railroad, and thousands of barrels of oil are soon being hauled to the station, where the oil is emptied into tank cars. There is a cheaper way of carrying the oil if there is plenty of it. This way is by laying a line of pipe from the oil field to a city or to the sea coast. (Fig. 168.) For hundreds of miles the pipes go in straight lines, over hills and across valleys, up one side of a mountain and down the other. The pipes are six or eight or even ten inches in diameter, and from time to time they run through big engine houses where are the pumps which drive the oil along through the pipes.

The oil fields of Texas, Louisiana, and Oklahoma have furnished much oil in recent years, but for a time Illinois, and then California, led all the states. A great deal of oil has also been sent to Europe from the Mexican port of Tampico, a town not far from the boundary of Texas. (Fig. 269.) Most of the wells in Mexico have been managed by English companies, with Mexicans doing the larger part of the work.

167. Oil refineries.—An oil refinery is a wonderful place. There workmen take thick brown or yellowish oil, and make from it gasoline, kerosene, machine oil, Christmas tree candles, vaseline, and many, many other things.

Some of the oil from the South Central States goes in pipe lines to the oil refineries of Fort Worth, Kansas City, St. Louis, and Chicago. Some of it goes in tank steamers to the refineries of Baltimore, Philadelphia, New York, and Europe. Some kerosene goes from American refineries in five-gallon cans all ready for the family lamps of the people in China, Japan, and the islands of the sea. (Fig. 485.) These five-gallon cans are handy to be carried on the backs of

donkeys or camels over the hills and mountains in countries where there are no roads.

168. Russian oil fields.—For many years the United States has produced more oil than any other country in the world. Russia has been second in the amount produced. The rich Russian oil field is located on the shore of the Caspian Sea, at the end of the Caucasus Mountains, near the town of Baku. (Fig. 315.) For many centuries, fire worshippers made long journeys to this oil field to worship the little flames that flickered around the rocks where the natural gas escaped and burned. Now oil is shipped from this region to different parts of Europe where people burn it in lamps and stoves, or make gasoline for automobiles.



Courtesy of Standard Oil Co. of New Jersey

Fig. 168. Pipe lines are laid straight over hills and across valleys. They carry oil for hundreds of miles.



Fig. 169. Japanese and American workers in a Louisiana rice field after the water has been drained off.

Photo. Doubleday Page Syndicate, N. Y.

QUESTIONS

1. How did people light homes before petroleum was discovered? 2. List the uses of petroleum. 3. In the days of George Washington, what animal supplied a good deal of oil for lamps and machines? How were the streets and churches lighted then? 4. What is the nearest oil field to your home?
5. How is gasoline shipped and stored so as to be safe from fire? 6. List the ports from which American petroleum is exported. On what bodies of water are they? 7. Locate four oil fields.

GENERAL VIEW OF THE SOUTH CENTRAL STATES

169. Varied products.—Many other products besides cotton and petroleum are found in this large, rich region. Louisiana and Texas produce salt, and lead the world in mining sulphur.

The long summer gives the crops plenty of time to ripen. The winter is so mild that grass grows near the gulf when snow and ice cover many northern districts. For these reasons, these states grow three crops that are not grown at all in the North Central States. One is cotton. The other two are rice and sugar cane. The people grow many other crops as well, such as corn, watermelons, peanuts, and vegetables and fruits.

170. Surface.—The surface helps in making this region good for farming. Most of the land slopes gently toward the Gulf of Mexico, so that most of the rivers flow into the gulf. The South Central States do not have nearly so many mountains as we find in the Western States. The physical map (Fig. 159) shows three highland sections, but there are no high mountains such as the Rockies or the Sierras.

The first highland is part of the Ozark Plateau, which we saw in Missouri. (Sec. 106.) It extends into Arkansas and eastern Oklahoma. Here is the same kind of hilly forest country that we found in Missouri.

A small part of Alabama and the eastern part of Tennessee and Kentucky are included in the Appalachian Highland. In this part the streams have cut many deep, sharp valleys, making these forested mountains a very hard country to cross. (Fig. 159.) For this reason people who live there do not trade nearly as much as the people who live in the level country.

The highest and largest highland in this group of states is in western Texas and western Oklahoma. It is a part of the same high, treeless, pasture plateau that we found near the 100th meridian in the Plateau States and in the North Central States. (Fig. 64.) It is high, but parts of it are level for long distances.

All together, these three highlands take up only a small part of the South Central States. Most of the rest of the surface is so level or gentle rolling that farming is easy.

171. Climate. A. *Cold waves and warm waves.*—The climate is very different

from that of the Pacific States. You remember that in California it is warm enough all the time for orange trees to grow, because the winter wind there always blows in from the warm Pacific Ocean. In the South Central States, the warm wind blows gently from the south one day, and perhaps the very next day a cold wind blows fiercely from the north. Thus Tennessee and Oklahoma have the weather of the gulf one January day, with a south wind warm enough to make the grass start growing, and the next day along comes weather like that of Iowa, with snow and freezing temperature. Freezing weather sweeps down even to the gulf shore at some time nearly every winter. When one of these windy cold waves comes to Texas, it is called a "Norther."

For two reasons the water of the gulf is always warm. One is because it is partly in the torrid zone. The other is because a warm ocean current brings warm water from the southern Atlantic Ocean through the Caribbean Sea into the Gulf of Mexico south of Cuba. It flows out again north of Cuba. After it leaves the gulf, this current is called the Gulf Stream. It warms the air that blows toward the United States from the Atlantic Ocean. Now you see why the ocean and the gulf winds in winter are always warm winds for our Southern States.

B. Rainfall.—Do you remember at what time of the year the California rains fall? (Sec. 132.) The South Central States have many rains in the summer when the crops need it, so that irrigation is not necessary except in western Texas. Cotton, corn, and most other crops do best in a warm, moist summer.

172. Agriculture.—Cotton is the chief of all these crops because the people of so

many countries have to buy it for clothing, sheets, and towels. Each year the cotton grown in these states is worth more than all the gold and silver mined in the whole world. The farmer who sells nothing but cotton usually grows some corn also. This he feeds to the horses or mules that pull his plows, to the cows that give the family milk, and to the pigs from which are made hams, lard, and bacon.

The South Central States are well adapted to the raising of cattle, hogs, and poultry. Warm and costly barns, such as the farmers must build in the colder North Central States, are not needed here. Many of the cattle live out of doors all winter long, and grass grows nearly all the year. Fields of peas and beans are grown, and the pigs are then turned in to eat them. Thus the pig gets its food without the farmer's having to harvest it at all.

On the Mississippi delta, in southern Louisiana, sugar cane is grown, but we shall find out more about that crop later. (Sec. 249.)

173. Rice.—In the central part of the South Central States, because of the many rains and moist air and level surfaces, we find a land of rice. The man who grows rice ought to love water, for the rice plant loves it; and the man who grows rice is working with water much of the time, for rice likes to grow in a pond. The rice plant looks much like the wheat plant, but it is a native of swamps, while wheat is a native of dry land.

The man who wants to grow rice must begin by getting a pond ready. First he chooses a level field, around which he builds a bank of earth. While the ground is dry, it is plowed, harrowed, and planted. Then the field must be turned into a shallow pond. For this purpose, the

grower often has to pump water from a stream or well. For weeks the rice plants grow in the water, which is held in the field by the banks around the edge. The water kills most of the weeds.

As harvest time draws near, the water is drained off. Then reapers, just like those used for wheat, harvest the crop. After that, the rice is threshed and taken to market in the same way as wheat is. You can find rice from Louisiana, Texas, or Arkansas in almost any store in America. But we do not yet grow much rice to send to other countries.

There are not as many places in the United States good for growing rice as for growing wheat or corn. (Fig. 87.) Only a few places have land so level that it can easily be turned into ponds, and a climate so rainy that there is water enough to fill the ponds while the rice grows. (Fig. 169.)

The newest rice district in the United States is California, where people raise big crops of rice by pumping water into fields on the delta of the Sacramento River. This place is not a land of

moist air or heavy rain, but the melting snow in the Sierra Nevadas gives plenty of water to irrigate the level delta.

Rice is grown in a very different way in China, Japan and India, but you will read



Photo. U. & U., N. Y.

Fig. 170. A head of rice, about one-fourth natural size.

See Fig. 84.

about that when you study these countries.

174. The drier western section.

—There is one part of these Southern States that has less rain than the rest. The map (Fig. 88) shows that western Texas, like all other parts of this high plain (Sec. 112), is a land of little rain. Here the south wind brings heat and drought from the lands of Mexico, while the south wind in eastern Texas brings moisture and rain from the waters of the Gulf of Mexico. See how the rainfall differs in different parts of this one state. (Fig. 88.) The drier part of Texas and Oklahoma is a land of pastures and large cattle ranches. The men ride around on horseback to look after the cattle as they pasture. The fields are rarely plowed. Only a little grass grows, so that a farm must be a very large one to support a family. The houses are far apart and there are not many people. Many cattle are sent from here to the corn farms of the North Central

States to be fattened before they go to the meat-packing plants of Kansas City or Chicago. Some of the Texas and Oklahoma cattle go to the meat-packing plants at Dallas, Fort Worth, San Antonio, and Oklahoma City. In the South Central States, the rain increases as we go east from the cattle ranch country. (Fig. 88.) In

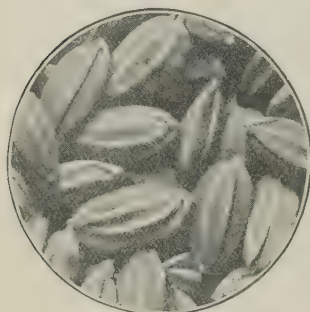


Photo. Underwood & Underwood, N. Y.

Fig. 171. Unhulled rice, often called "paddy." A little larger than natural size.

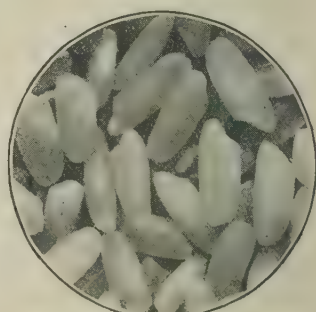


Photo. Underwood & Underwood, N. Y.

Fig. 172. Rice, after the hull has been taken off by threshing.

central Texas we come to the cotton country, which extends to the Atlantic Coast.

175. The colder northern part.—The states of Kentucky, Tennessee and Arkansas are not so warm as those that touch the gulf. Except in the lowlands lying along the Mississippi and the Red rivers, the summers are not quite long enough for cotton to ripen. The farming is therefore more nearly like that of the North Central States, with corn, hay, and cattle as products.

Kentucky grows more tobacco than any other state. Louisville, Kentucky, near the tobacco district, is the greatest tobacco market in the world. Tobacco buyers from Europe go there every year. Covington, across the river from Cincinnati, is also a tobacco market.

176. Lumbering.—Most of the people in the South Central States are busy with either farming or lumbering. There is a great deal of lumbering, as you remember from an earlier study. (Sec. 95.) Much of the land, even where it is level enough for farms, is still in forest. About half of the lumber produced in the United States comes from these states. Perhaps the floor of your schoolroom is made of southern pine, and the nearest lumber yard may have shingles of cypress from some southern swamp.

177. Manufacturing.—You have learned (Sec. 160) that the farmers used to put

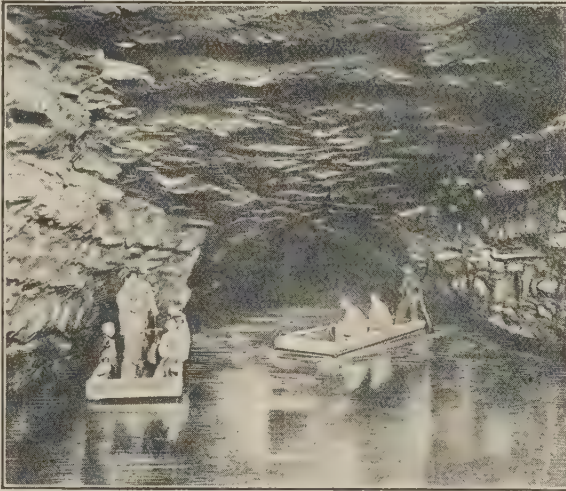
cottonseed meal back into the ground to make the cotton grow. Nowadays, the cottonseed meal is given to the cows, and we have had to find other kinds of fertilizer. All the leading seaports of the South Central as well as of the South Atlantic States have fertilizer factories. It is easy to import the raw materials—phosphate rock from Florida, bones from Argentina, nitrate of soda from Chile, and sulphur

from Texas. Deposits beneath the flat lands near Galveston make Texas a great sulphur producer. Seaports are also convenient places from which to send the heavy sacks of fertilizer to the farmers of the region.

Manufacturing is increasing in the South Central States, but there is not so much of it as in the North Central States.

For this reason we do not find so many big cities. There are in this section only two of the thirty-four largest cities of the United States, while in the North Central States there are fourteen of them.

178. Population and cities.—As farming and lumbering do not need a large population, the South Central States have fewer people than the North Central States. In Oklahoma there are still many Indians, for this state was once set apart as a home for the Indians, and no white men could own land there before 1890. Since 1890, white men have gone there in great numbers and have built thriving trade centers, such as Oklahoma City.



Photo, Brown Bros., N. Y.

Fig. 173. An underground river in Mammoth Cave, Kentucky. Limestone regions have few surface streams. Can you tell why?



Photo, U. S. Dept. Agr.

Fig. 174. A clay road after winter rains. One bale of cotton to a load. Jackson, Tenn.



Photo, U. S. Dept. Agr.

Fig. 175. A hard-surface road: ten bales to a load. Jackson, Tenn. A good road adds to the value of farms.

Many of the people in some parts of the South Central States are negroes. In some sections there are more negroes than white people, but nearly all the people living on the highlands are white.

As the population is scant, much of the country is still in forest, and many a boy visits his string of rabbit traps on a crisp autumn morning as he goes across the fields and through the woods from his farm home to the country school.

The cities of the South Central States are chiefly trading cities, whose people are busy shipping out cotton, lumber, oil, rice, and tobacco, and shipping in supplies to the surrounding farms and towns. The largest cities are those with the best location for trade.

New Orleans, on the Mississippi, about one hundred miles from its mouth, can be reached by large ocean steamers and by boats from points far away up the river. If we walked along the wharves at New Orleans, we would see big ocean steamers from Europe, Asia, and South America. Near by would be river boats piled with bales of cotton from Baton Rouge, Vicksburg, and Memphis, with lumber from Shreveport on the Red River, corn from

St. Louis, hogsheads of tobacco from Louisville, and big, black, flat boats with coal from Pittsburgh. What states would you see in going by boat from Chattanooga, Tennessee, to New Orleans, Louisiana? It is easy to see why New Orleans is the principal city of the South Central States, just as Chicago is of the North Central States.

Galveston and Mobile, the rival seaports of New Orleans, have no such waterway into the interior as the Mississippi River makes. But Galveston has several railroads and it is the nearest port to a large region. Therefore, its trade is growing rapidly. Ships from many countries come there to get grain and cotton that are to be sent away to other lands.

From Mobile, boats can go nearly to Birmingham. Birmingham has coal and iron mines near it, and is a rapidly-growing manufacturing city.

Hot Springs, Arkansas, is a famous health resort. San Antonio, Texas, not only is a thriving manufacturing and trading city, but also is a well-known winter resort.

QUESTIONS

1. In what ways does the rice plant look like the wheat plant? Like tall grasses? How tall do rice stalks grow? 2. If you traveled from

New Orleans to El Paso, Texas, what difference would you find in the rainfall as you went west? (See Fig. 88.) Why would you not find rice fields in western Texas? 3. The rice harvesters have come from Mexico. Why does one see Mexican laborers in Texas? Negroes in Louisiana? Indians in Oklahoma? 4. El Paso is Spanish, meaning "The Pass". What river cuts a valley, or pass, through the mountains here? 5. Keep a class record of the wind direction for two weeks. Note if the weather changes as the wind changes direction. Make a calendar on the blackboard or on a large piece of smooth wrapping paper. In the space for each day, write the direction of the wind for the day, and say whether the day was clear, cloudy, or rainy; whether cool, warm, or hot. 6. After making these observations, answer the following questions: What wind brings you clear weather? Cold weather? Rainy, snowy, or misty days? Hot weather? Dry weather?

7. How far east or west of the meridian of New Orleans do you live? 8. Is the greater part of South America east or west of this meridian? 9. Through what waters and near what islands would a ship pass carrying cotton from Galveston to New York City?

GENERAL QUESTIONS

1. Name and bound each of the South Central States. Give their capitals. 2. Draw a map, free hand, showing the boundaries of the states and the locations of the principal cities. 3. What groups of states touch this group? (See map Fig. 63.) 4. List the principal things that the people of these states have to send to other states. Also list the things they need but do not produce. 5. List the things that you get from these states.

THE SOUTH ATLANTIC STATES VEGETABLES, PEANUTS AND NAVAL STORES

179. Vegetables in the winter time.—Have you ever thought how it is that when the snow covers the ground in the winter time, in the northern states, people living in those states see lettuce, fresh beets, and many other fresh vegetables for sale in the city grocery stores? If you ask the grocer he will tell you that the fresh things come



© Underwood & Underwood, N. Y.

Fig. 176. The sandy soil of the coastal plain makes good watermelons in this Georgia field.

by fast train from the South Atlantic States,—or from California. Florida farmers can ship vegetables in the winter, because in the tip end of Florida a whole winter sometimes goes by without any frost at all. There is never any frost at Key West, out in the warm water of the gulf. In this warmer part of Florida, pineapples, grapefruit, and oranges are grown. In central Florida a few frosts come, but the weather is warm nearly all the winter. The people here grow vegetables to send to the northern states during February and March.

There is much sandy soil near the sea in all the states from Florida to Delaware. The farmers plant whole fields of lettuce, watermelons, beans, beets, cabbage, potatoes, and other vegetables, for these crops do well in such soil. A traveler may often see twenty to thirty loaded farm wagons and motor trucks at a single station. A farm that grows vegetables for market is called a truck farm.

Since the first vegetables in the market bring the highest prices, every farmer tries to plant early. But sometimes, if he plants too early, a frost comes and kills everything. Then he has to plant again. One year a Florida farmer had his young plants

Fig. 177.

frozen three times. But he planted the fourth time, and made money on the crop.

180. Canned vegetables.—The peninsula between the Chesapeake Bay and the Delaware Bay is one of the places with many truck farms. Many of the vegetables grown in this region are sent to factories and canned for winter use. Baltimore is one of the greatest canning cities in the world, because of the supplies of fruit and vegetables brought by the many boats that go up and down the creeks and rivers flowing into the Chesapeake Bay. Many farmers along the shore have their own boat landings. When you go to your grocery store, see if you do not find some Maryland addresses on the fruit and vegetable cans. You may also find California addresses, for California, too, has vegetable fields and canneries.

181. Peanuts.—Every school boy and every school girl has surely seen something that came from North Carolina, for everybody has eaten peanuts. The negroes brought peanuts with them from Africa, many years ago, and grew them around their cabins on the plantations. White people soon learned how good they were. One of the reasons we all like them so well is because they have almost as much oil in them as there is in butter. In fact, one of the leading uses of this nut is to make peanut butter.

The nuts grow under the ground. When they are ripe, the whole plants are plowed up and stacked to dry. Then a threshing machine knocks the pods loose from the plants, just as the wheat grains are loos-



Photo. U. S. Dept. Agr.
Fig. 178. A peanut plant. The lumps on the roots gather plant food from the air.

ened from the straw. There are several counties southwest of Norfolk where nearly every farmer grows peanuts. In the city of Norfolk there are great warehouses full of peanuts waiting to be sent all over the country.

After the farmer has secured all the peanuts he can from the field, the pigs are turned in to eat those that remain in the ground. The pig's nose tells him where the nuts are, and then roots them out for him. In many parts of the South, fields of peanuts are

grown especially for the pigs to harvest, peanuts being very good indeed to make pigs grow and give them meat.



Photo. Publishers' Photo Service, N. Y.
Fig. 179. A Virginia peanut gatherer and stacks of peanuts. The nuts dry in these stacks, and are then threshed from the vines and sent to market.



Photo. U. S. Dept. Agr.

Fig. 180. Georgia pigs harvesting a crop of peanuts without cost to the owner and with pleasure to themselves.

182. Naval stores.—At southern seaport towns you can see three things piled up on the wharves waiting for the ships to take them away. These three things are bales of cotton, piles of lumber, and barrels of rosin and turpentine. Rosin and turpentine are sometimes called *naval stores* because the rosin is used in building wooden ships. Naval stores are made from the sticky sap of the pine trees that cover so large a part of these states.

The way in which rosin and turpentine are obtained is by making a wound in the tree, from which the sap runs out into a cup fastened to the trunk, or into a pocket cut in the side of the tree. The turpentine gatherer takes buckets of this sap to a little shanty in the forest, where it is boiled and separated into turpentine and rosin. Much of the rosin is sent to Europe.

In France, they gather naval stores in a better way than we do. Our turpentine gatherers often kill the forests entirely. The French forest owners have a plan by which they get turpentine and still keep the forest. They tap

only the big trees. They never draw turpentine from a tree until it has grown big enough to be cut down; then they bleed it to death by drawing off all the sap it has. Then the tree is sold and the younger trees are left to grow until they are big enough to sell. By this means there are naval stores and wood to sell every year, and the forests are always growing. In many American forests fire has killed all young trees.

QUESTIONS

1. How many watermelons can you count on the level Georgia field? (Fig. 176.) One thousand is a good yield per acre. 2. Why are peanuts often called "ground nuts"? 3. What do the Eskimo children who can't get peanuts eat for their oily food? 4. If you ever had your own garden, write a story about it. Tell of the enemies it had and how you fought them. Be sure to tell what kind of harvest you had. Choose a good title.

5. How do canning factories help those who grow and those who eat vegetables? 6. Why may there be trade in vegetables between two places, both of which can grow them well?

7. What states grow winter and early spring vegetables? What states buy them? 8. What use is made of turpentine? of rosin? 9. What countries of Europe take better care of their forests than the United States? Recall the study of lumbering. (Sec. 98.) Tell how the French people take better care of their pine trees than Americans do.



Courtesy of U. S. Forest Service

Fig. 181. Hauling pitch from a turpentine grove, Ocilla, Georgia. The method of tapping shown in this picture soon kills the trees. Is this a good forest? What has happened to the young trees?

COTTON CLOTH

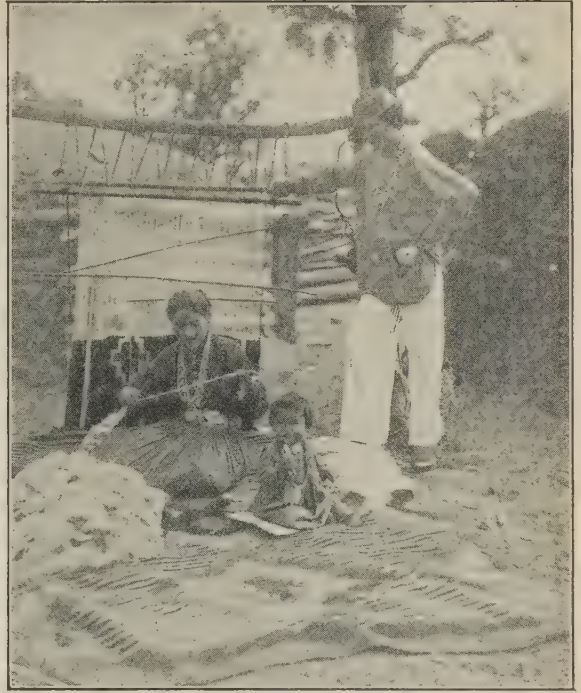
183. Making cloth by hand.—Everybody needs clothes. Since cotton is the cheapest material we have for clothing, we may expect to find many people in a great many factories busy making cotton cloth. Some of these factories are in the South Atlantic States.

Years ago, when the white people first settled in America, and for a long time afterward, nearly every woman spun the thread or yarn to make the clothes for her family. She spun the thread on a hand spinning wheel and then wove it into cloth on a hand loom. Now the spinning machines and weaving machines are so large that it takes engines or waterwheels to run them, and the yarn and cloth are made in factories where many people work.

A long time ago people usually wore wool or linen, because cotton was very expensive. Before Eli Whitney invented the cotton gin (1793), it took a person half a day to pick by hand the seeds out of a pound of cotton. The gin did it so quickly that cotton became cheaper than wool or linen. Now that we can make cloth so easily, the little Indian girls in some of the missions on the Yukon River, in Alaska, wear gingham dresses; and even the black men away off in Central Africa wear cotton cloth that white men have made.

For a long time, raw cotton was sent out of the Southern States to be made into cloth in the mills of England and New England and then brought back to the cotton states for the people there to wear. Now, cotton mills have been built in Virginia, North Carolina, South Carolina, Georgia and Alabama, and the cotton mills are beside the cotton fields.

The western part of all the South Atlantic States, except Florida and Delaware,



Courtesy of National Park Service

Fig. 182. A Navajo Indian family of New Mexico. The mother is spinning wool by hand. Back of her is the loom upon which she has a blanket partly woven. Can you find in the picture a finished blanket?

is highland—the Southern Appalachian Highland—and as the rivers run down toward the Atlantic, there are many falls in them. Scores of these falls are used to turn waterwheels. The power is carried on electric wires to cotton mills in Lynchburg and Danville, Virginia; Greensboro, Raleigh and High Point, North Carolina; Spartanburg and Anderson, South Carolina; Athens and Rome, Georgia, and scores of other cities and towns in those states.

184. Factories for cotton cloth.—It was in New England that cotton cloth was first made in American factories, for New England also has waterfalls which furnished power for machinery. These New England streams were used to run cotton mills over a hundred years ago, and ever since that time ships have been taking cotton from South Atlantic and gulf ports to such New



Photo. Brown Bros., N. Y.

Fig. 183. This machine spins hundreds of cotton threads at a time, and winds them on bobbins. One girl attends several hundred spindles. South Carolina.

England ports as Boston, Salem, and Fall River in Massachusetts, and Providence in Rhode Island. From these ports, the cotton bales go to factory towns to be made into cloth. From them the fine cloth of New England goes to every state in the United States.

185. Cotton mills in foreign countries.—The first cotton factory in New England was started by an Englishman, for England had cotton mills before New England had them. England has long led the world in the cotton cloth trade. Ships loaded with bales of cotton from America, Egypt, and India, are unloaded every day at Liverpool and Manchester. Every European country has some cotton mills, and much American raw cotton is sent to France, Germany, Spain, and Switzerland. (See Fig. 315.) The skilful and industrious people of Switzerland buy our bales of cot-

ton and send the material back to us made into beautiful lace.

There are many kinds of cotton, and many, many things are made of cotton. Sailing vessels all over the world have sails of coarse cotton cloth. Millions of soldiers have slept in cotton tents. The people of Japan make beautiful crepe cloth of cotton. The native of India wears a big turban of cotton cloth instead of a hat. The stores in the tiny villages of many lands have spools of cotton thread for sewing. Most of our sheets, pillow-cases, towels, and even some kinds of twine and rope are made of cotton.

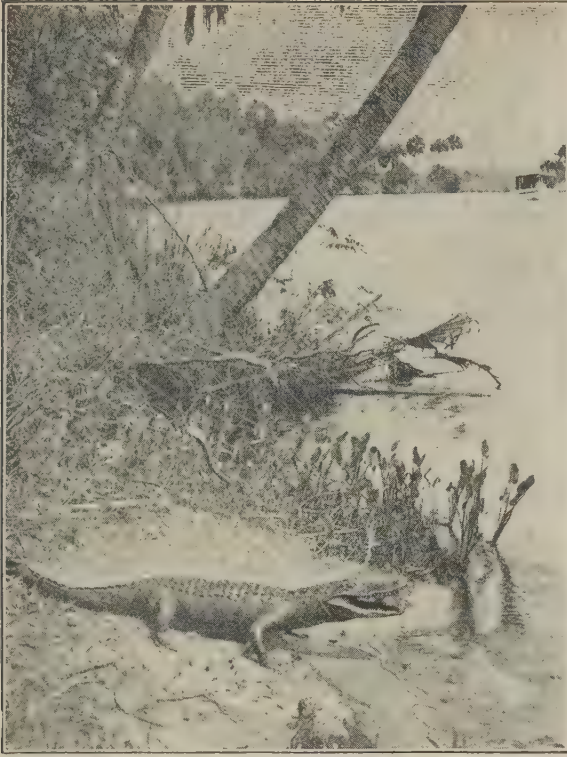
QUESTIONS

1. In one column list all the countries named in this study of cotton cloth that make cotton cloth or thread. In another column, list fully the things made from cotton. Head each column as you have learned to do from previous charts. 2. What are the differences between the Indian woman's spinning and the woman's in the cotton factory? (Fig. 183.) 3. Name and point out all the states that grow cotton; six ports that are near cotton fields.

GENERAL VIEW OF THE SOUTH ATLANTIC STATES

186. Many kinds of climate.—In the winter time, when boys and girls are coasting and skating in West Virginia, Maryland, and Delaware, people are bathing in the sea on the coast of Florida. It is plain that a group of states must be very long indeed to have winter sports in one part and at the same time summer sports in another part. Take your ruler and see how far it is from Wilmington, Delaware, to Key West, Florida. (Fig. 177.)

187. The mountains and valleys.—Every state in this group, except Florida and Delaware, is crossed by some of the Southern Appalachians. Mt. Mitchell, to the north of Asheville, North Carolina, is



© Underwood & Underwood, N. Y.

Fig. 184. An alligator looking for a meal. Florida.



Courtesy of Board of Trade, Tampa, Fla.

Fig. 185. A young grapefruit tree. Tampa, Florida.

the highest mountain east of the Rockies. The scenery in these forest-covered mountains is very beautiful all the way from Georgia to Pennsylvania. One range is called the Blue Ridge, because the mountains look blue at a distance. The entire region has plenty of rain and is naturally forest-covered.

There is a long valley called the Great Appalachian Valley, which gives an open way through the highlands from Alabama to Pennsylvania. Through this valley runs a fine automobile road from Birmingham, past Roanoke, Virginia, and on to Harrisburg, Pennsylvania. Blue mountains are constantly in view, and neat farms with their fields of wheat, corn, and pasture line the way.

188. Plains, swamps, and islands.—Every state of this group but one, West

Virginia, has some of the low, level coastal plain. Many parts of the coast plain are so flat that the rain water does not drain off rapidly. The largest of these wet lands are the Everglades near Lake Okeechobee in Florida, and the Dismal Swamp near Norfolk. Some of these wet lands are being drained to make room for vegetable fields. This is a good plan. Not only will we gain rich vegetable land, but the draining of the wet lands will destroy millions of mosquitoes that breed in the still waters. They are all very annoying, and one kind spreads malaria.

On the coast of North Carolina three sharp points of land stick far out into the ocean. Near them the sea is shallow, with many sand bars hidden just below the surface. Vessels going up and down this coast must pass these points. So many



Fig. 186. Tonging oysters; one method of oyster fishing.

Photo. Brown Bros., N. Y.

ships have been lost there that the sailors dread these places and have named them Cape Hatteras, Cape Fear, and Cape Lookout. (Fig. 177.)

These capes are part of a long, sandy beach, or string of narrow islands that stretches along the coast from Florida to New Jersey. Between these islands are openings called inlets, through which small boats can sail into the many bays (often called sounds) that lie between the beaches and the swampy mainland. These beaches are called *barrier beaches* because they protect the bays behind them from the force of storms at sea. Small boats that would be swamped on the ocean can carry their cargoes safely along the coast behind these beaches for long distances.

To make it easier to travel up and down the coast, a canal has been dug from Albemarle Sound in North Carolina, to Norfolk, and another between the Chesapeake and Delaware Bays. Large barges loaded with lumber can now pass from North

Carolina to Philadelphia without going out to sea at all.

When the proposed ship canal across New Jersey has been dug, vessels can go on from Philadelphia to Boston just as safely. The entire route will be called The Inland Waterway.

189. Agriculture.—This group of South Atlantic States, besides having a great variety of climate, as we have discovered, has also a great variety of soil. This means that it has many different products. Cotton, vegetables, peanuts, oranges, lumber, and naval stores have already been mentioned, but there are also many more things.

Further inland from the sandy coast plain is a hilly country good for farming.



© Underwood & Underwood, N. Y.

Fig. 187. All that is left of a great ship and its cargo. Such a scene is not uncommon on Cape Hatteras. The Inland Waterway will prevent many such wrecks.

Here farmers raise cotton and tobacco, wheat and corn, rich grass for horses, sheep and cattle, and many kinds of fruit. If you live in the East you may have heard of Georgia peaches. Many people in England, Holland, and Germany have eaten apples from the



Courtesy of Amer. Agr. Chemical Co.

Fig. 188. Tobacco fields and curing sheds.

orchards near the mountains in Virginia and Maryland.

190. Cities, trade, and manufacture.—

The South Atlantic States have many manufacturing towns, mainly because the materials for manufacture and the power to run the mills are there. For raw materials, they have cotton in the south, iron at Baltimore and Wheeling, tobacco in Virginia and North Carolina, and lumber on the plains and also on the mountains. These states are very rich in lumber of many kinds. There is water power where the streams come down from the mountains. One of the largest water-power companies in the world delivers power to Richmond, to Atlanta and many cities between them. Much coal is mined in the highlands of Virginia, West Virginia, and Maryland. Charleston and Wheeling, West Virginia, are the largest cities in the coal fields. Railroads run from these places to Chesapeake Bay, carrying coal to Norfolk and Newport News, and from these ports it is carried in big boats to New

York, Boston, the West Indies, and even to Europe.

Baltimore is the largest of all the cities of the South Atlantic States. It has a fine harbor on the bay, and is near to the coal fields of the highlands, the vegetable fields of the lowlands, and the fisheries of the Chesapeake Bay. It is a great center for canning vegetables and oysters.

The oysters live on the sand and gravel at the bottom of shallow bays, and eat the little plants and animals that float to them. Oystermen in small boats scoop them up with long tongs or dredges and take them to market by the boat load. Oysters are grown at the mouths of rivers that flow into the bays along the Atlantic and Gulf coasts all the way from Canada to Mexico, and they are gathered in every state along the coast. Oysters thrive only in places where fresh water and salt water flow together. Many are taken in Long Island Sound (Fig. 228), but the greatest oyster supply comes from Chesapeake Bay. The canned oysters of Baltimore are sent to many states.



Fig. 189. An airplane view of the capitol, Washington, D. C. Pennsylvania Avenue appears beyond the capitol. Compare with Fig. 43, p. 29.

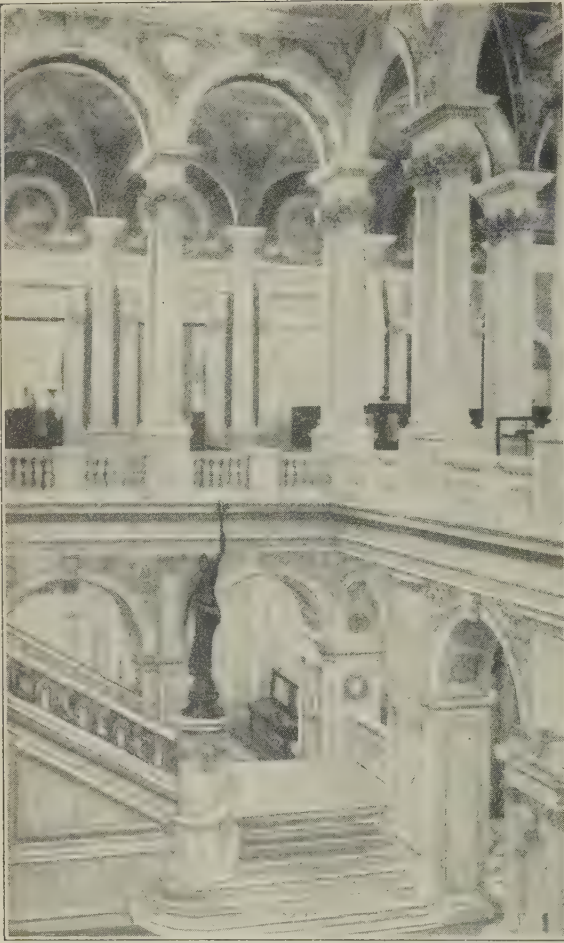


Fig. 190. Stairway in the Library of Congress, Washington, D. C., one of the beautiful buildings of the world.

Baltimore has many steamship lines to Europe, and imports much iron ore from Cuba. This is used in the many iron and steel works of Baltimore, and also in her large shipyards.

Wilmington, Delaware, also makes machinery and ships, and is the headquarters of the largest dynamite company in the world. The dynamite factories are built in lonely places along the Delaware River and elsewhere, so that if they blow up they will not do much damage.

Greensboro has the largest denim (cotton cloth) mill in the world. Tobacco manufactures are very important in Durham

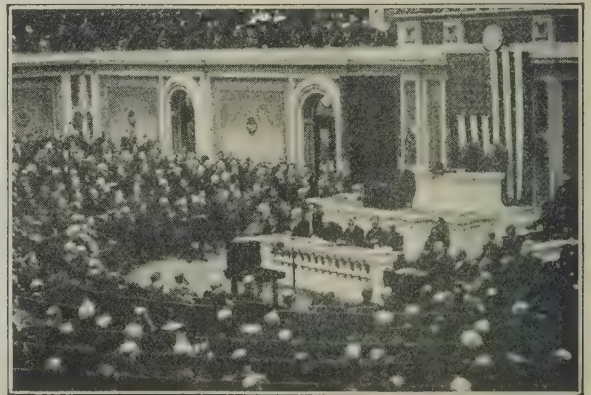
and Winston-Salem, North Carolina, and at Richmond.

Hampton Roads, the harbor of Norfolk and Newport News, is a very good harbor, large enough to hold all the ships of the world.

We have already seen that the ports south of Norfolk are busy with the export of cotton, lumber, and naval stores. Tampa, in west Florida, has still another product. This is phosphate rock. 'Thousands and thousands of tons of this rock are sent to other American ports and to Europe. From phosphate rock fertilizer is made for the farmers' fields. This rock is dug up from beneath the sands near the coast of Florida. Some is also dug in Tennessee and in South Carolina.

Atlanta, Georgia, is the largest of the many inland towns. Many railroads center there, and many wholesale stores supply the retail stores in the villages and small towns of the neighboring country.

Washington is the second city in size in all this group of South Atlantic States. It has very little manufacturing or trade. Its great industry is government. The President of the United States lives there.



© Underwood & Underwood, N. Y.

Fig. 191. The House of Representatives, one of the two rooms of the Capitol in which our laws are made. President Coolidge addressing the members of Congress. In the gallery are visitors. The Senate room is similar but smaller, as there are fewer Senators.



Photo. U. S. Dept. Agr.

Fig. 192. Some of the sheep raised by the Boys' Sheep Club, Beltsville, Md.

Thousands of men and women are busy running typewriters, making postage stamps and paper money, counting money, making government maps, and printing government books.

In the beautiful Capitol building, the senators and representatives from all the states meet to make the laws for the entire United States. These senators and representatives together make up the Congress of the United States.

Washington is not in any state at all. It is in the District of Columbia, which has an area of only seventy square miles. How large is your state?

Congress rules the District and its people do not vote for president.

The capital city has many beautiful public buildings belonging to the government, and many travelers go there to see them. The city was named for George Wash-

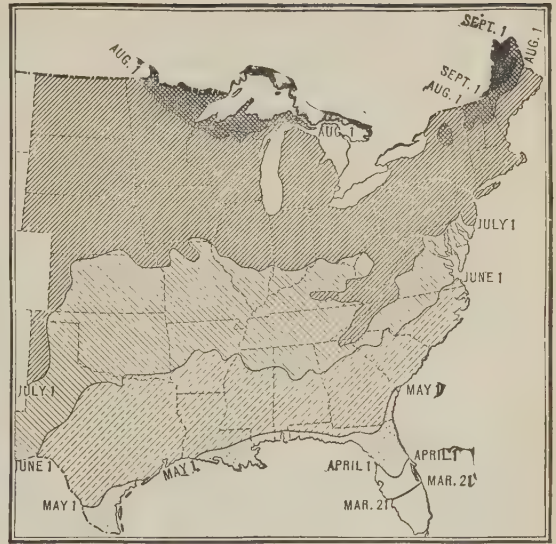


Fig. 193. Map to show the dates on which potato digging usually begins in different parts of the United States. How does this map show the northward advance of summer? How does it explain trade?

ington, the first President of the United States. His old home at Mt. Vernon, on the bank of the Potomac near Washington, is a house dear to every American.

QUESTIONS

1. Which two South Atlantic States have no mountains? Which two have large swamps?
2. What two sounds are in North Carolina?

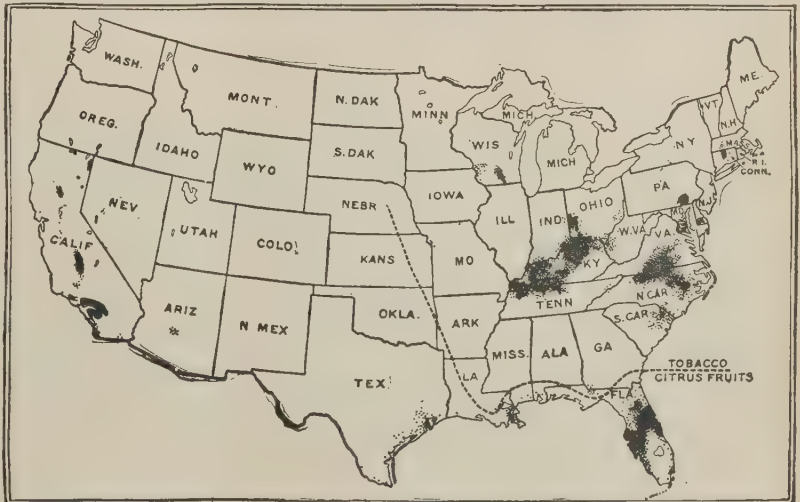


Fig. 194. A map showing where tobacco and citrus fruits are grown in the United States. See how the citrus fruits are grown in both eastern and western states, while tobacco is grown only in the eastern states. The northern states are too cold for orange, lemon, and grapefruit trees.



© Altwater and Bros.

Fig. 195. The point of land between the two rivers which join to form the Ohio at Pittsburgh, Pa. See the many barges, the bridges, and the tall buildings. They tell the story of a very busy trading place. Pittsburgh is the iron and steel center of America, and is also famous for making glass and electrical supplies.

3. Why were Cape Fear and Cape Lookout so named? 4. Why has the United States Government placed lighthouses on these sandy islands? 5. Why does Boston have to send to Norfolk for coal? (See Sec. 221.) 6. Tell some of the uses of the large buildings near the Capitol in Washington.

7. What makes Washington such a beautiful city? 8. Do you think Key West has a lighthouse on it? Why? Why is the coast of the South Atlantic States dangerous? 9. Tell how islands make the Carolina coast safe for small freight boats. Trace a safe route for small boats from North Carolina to Philadelphia. (Figs. 64, 177, and 198.) 10. Name the bodies of water through which the boats would pass.

11. Compare the South Atlantic States in length with the Pacific Coast States. 12. List the cities of the South Atlantic States, dividing them into four groups or kinds. What is each city noted for? Locate each on the map. 13. What city in this group is not located in any state? Why would you enjoy visiting it? Describe an imaginary trip to this city, illustrating your talk with pictures if you can. 14. Represent this group of states in sand, showing the Appalachian Highlands and coastal plain. Show the cities in some good way.

GENERAL QUESTIONS

1. Name and bound each of the South Atlantic States. Give their capitals. 2. Draw a map, free hand, showing the boundaries of the states

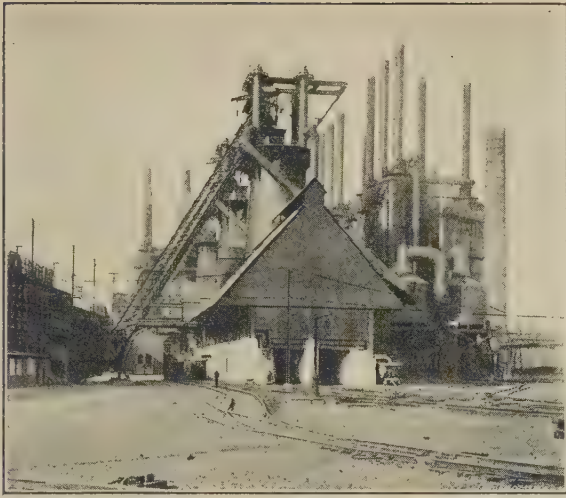
and the location of principal cities. 3. What groups of states touch this group? (See map Fig. 63.) 4. List the principal things that the people of these states have to send to other states. Also list the things they need but do not produce. 5. List the things that you get from these states.

THE MIDDLE ATLANTIC STATES

COAL AND IRON

191. The old way of making iron.—

No one knows how long ago it was that men learned how to roast iron ore in a hot fire until it was melted and the iron ran out, ready to be pounded on the anvil as we see the blacksmith pounding and shaping his iron to-day. Long before the time of Christ, white men, yellow men, and black men knew how to make iron. Iron spear heads and axes were a great improvement over the tools of stone that men had used before they got iron. Learning how to make iron was the greatest invention of ancient man. These early people made a fire of charcoal (partly burned wood) on a



© Keystone View Co.

Fig. 196. An iron smelting plant. Little cars carry ore and coal up the inclined plane in the left center of the picture, and drop them into the big round blast furnace. Pittsburgh, Pa. Can you see a stream of white-hot iron flowing into the ladle car at right center?

little hearth or forge, and fanned it hard to make it very hot. In this fire they melted their iron ore. It took much hard work to make a little iron.

Men were still making iron with these charcoal fires when our great-grandfathers were born, and there were stone forges, or furnaces, in the woods in every state on the Atlantic Coast. The most of them were in Pennsylvania and New Jersey, where iron was plentiful. Soon after the railroads came (about 1820), somebody learned how to make iron with the hard coal found in eastern Pennsylvania near the cities of Scranton and Wilkes-Barre.

After a few years, someone discovered a way to partly burn soft coal and turn it into coke to use instead of charcoal for the smelting of iron ore. There is so much more

soft coal than there is hard coal, and soft coal is so much easier to dig, that many of the iron makers moved over to western Pennsylvania. There layers of soft coal stick out of the rocks on the hillsides, and county after county has layers of coal under it. There are now hundreds of coal mines where men are digging out this coal.

192. Pittsburgh, an iron center.—Western Pennsylvania is a plateau, where many streams have cut narrow valleys. Therefore most of the land is very hilly. In such a country the railroads have to follow the streams. If you look at the map (Fig. 198), you will see how the railroads of western Pennsylvania, as they follow the streams, must come together at Pittsburgh. This junction point (Fig. 195) is in the midst of the coal fields, and iron ore is found near by; thus this section early became an easy place in which to make iron and steel, and things that are made of iron and steel.

About 1884 it was found that the very rich iron ore from the mines near Duluth (Sec. 101) could be brought down the lakes to Cleveland, taken to Pittsburgh by train, and made into iron more cheaply than if the poorer ores of Pennsylvania were used. As a result, big lake steamers and more

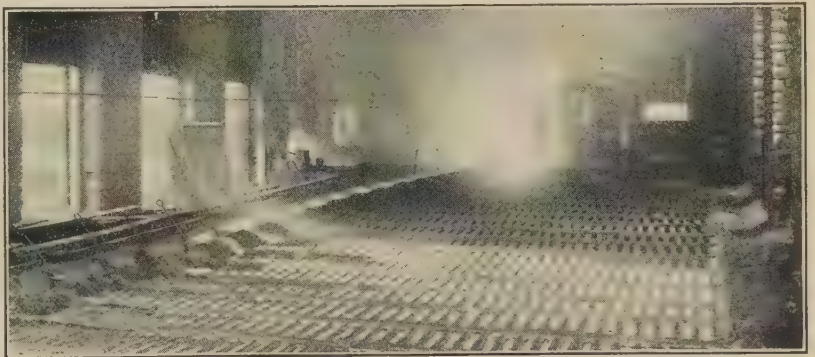


Photo. Publishers' Photo Service, N. Y.

Fig. 197. A view inside the smelter. The floor at the foot of the blast furnace is made of sand. When the hole at the bottom of the furnace is opened, a stream of melted iron flows from the furnace at the back through the channel at the left. Each little mouldful cools and hardens, and is called a pig. The pigs may later be heated and changed to steel or iron of different qualities.

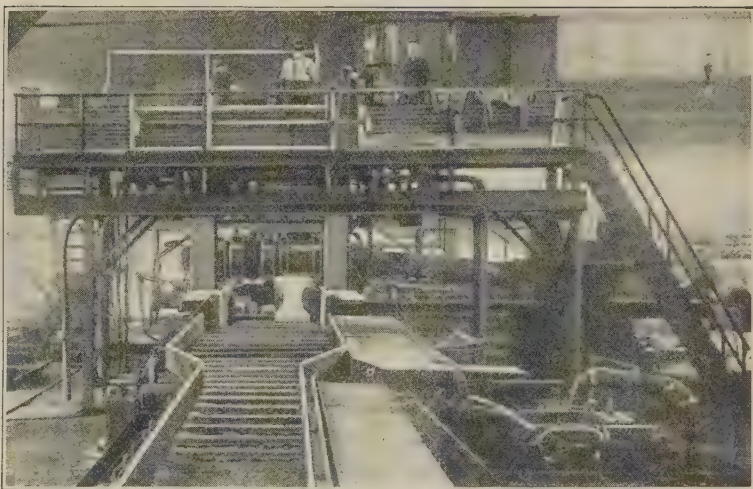


railroads were built. New iron mines were opened near Lake Superior, and more coke ovens were made in Pennsylvania. Now millions and millions of tons of iron ore come down the lakes every year to Pittsburgh, the greatest iron center in the world.

193. The new way of making iron.—An iron furnace is ten times as high as a room in an ordinary dwelling-house, and is full of roaring fire from top to bottom. Its flames light up the sky at night for miles around. Little car loads of coke, ore, and limestone to make the ore melt easily, are dumped into the furnace every few hours day and night, weekdays and Sundays, for months and months. The fire in the furnaces is never allowed to go out, except for repairs; for it takes days to start a furnace, once it stops.

Every few hours a hole is opened in the bottom of the furnace and the melted iron runs out. This is led away down a channel in a sand floor and allowed to run off into little pools where it cools in chunks, each about as big as three or four bricks. These pieces are called pigs. Sometimes the melted iron, still hot, is taken to the neighboring steel mills, heated more, and changed into steel. After this it is poured into big moulds and cooled a little. Then, while still white-hot, it is rolled by big rollers (Fig. 199) into bars, rods, rails for railroads and trolley lines, plates for boilers and ships, parts for steel bridges and steel buildings, and sheets for tin plate.

194. The workers in coal and iron.—Smelting iron is hot, dirty work; never-



Courtesy of Bethlehem Steel Co.

Fig. 199. Rolling steel. You see the end of a white-hot mass of steel passing toward us between rolls, which are turned by 6000 horsepower engines, and are controlled by a man pulling a lever. After many trips through the rollers, the steel will be a girder.

theless, men of many nations have come to Pittsburgh to work in these mills. In that city we can hear men speaking Swedish, German, French, Italian, Bulgarian, Rumanian, Polish, Russian, Greek, and several other languages.

The need for workers in mine or factory has caused towns to spring up suddenly where a few years ago there were fields and forests. The foreigners who came to America are not used to our ways and do not know our ideals. Their children must be taught our language and what it means to be a good American. Some of us forget that all people in America except the Indians were once foreigners.

195. Where iron is made.—Pittsburgh is called the Smoky City because the soft coal that is burned in the iron furnaces and steel mills there makes a heavy smoke that often hangs over the city. (Fig. 195.) There are many more of these furnaces and mills in smaller cities and towns along the rivers near Pittsburgh, and between Pittsburgh and Lake Erie. Buffalo also has great iron and steel industries, using coke



© Brown Bros., N. Y.

Fig. 200. Mules drawing coal out of a mine in western Pennsylvania. They can haul very long trains of these little cars.

from western Pennsylvania to smelt the ore right beside the dock where the steamers unload it.

Large new iron factories, called iron and steel plants, have been built recently in Harrisburg, the capital of Pennsylvania, and in other Pennsylvania towns. Some of the ore for these eastern Pennsylvania plants comes through the ports of Baltimore and Philadelphia, from Cuba, Sweden, and even from Chile. Soon we shall be getting iron ore from Brazil, which has more iron ore than has any other country. American companies have bought mines there.

196. Pennsylvania coal. — Pennsylvania leads all the states in the production of coal. It has two kinds of the finest quality. In the eastern part of the state, about Scranton and Wilkes-Barre, is the hard coal that people like to burn in their stoves and furnaces.

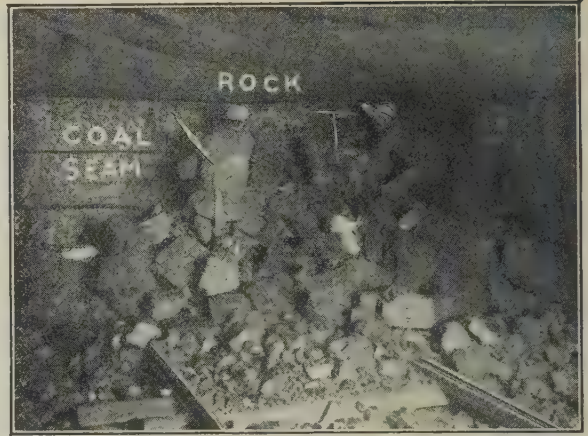


Photo from Wide World Photos.

Fig. 201. Miners digging coal in western Pennsylvania. The coal has been loosened by a blast. Compare this scene with the one in Fig. 127.

Eight different railroads carry the coal from these hard coal mines, which are only a hundred miles from Philadelphia and from New York. Both of these cities are great coal markets, and both of them send out to New England cities many boats loaded with coal, for there is no coal in New England.

In western Pennsylvania, as you have already learned (Sec. 191), are the mines of soft coal. The soft coal fields are much larger than the hard coal fields, and more soft coal is used. This is the coal that is burned in steel mills, in most factories, and in locomotives. The soft coal fields are near the ports on Lake Erie to which the lake boats come bringing iron ore. The returning ore boats carry coal to the cities on the upper lake and across into Canada, since there is no coal in the part of Canada near the Great Lakes.

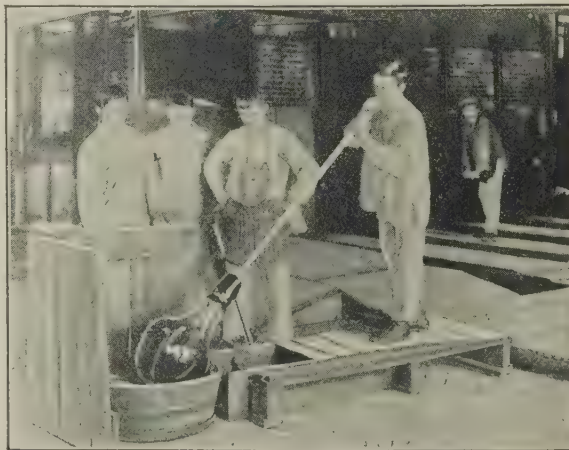


Photo. International Film Service, N. Y.

Fig. 202. Pittsburgh glass blowers blowing a bottle.



Fig. 203. Map of the United States showing where coal is found.

In such a cold country as Canada people need much coal.

Pittsburgh is well located to ship coal also to the southwest. Boats on the Ohio River (Fig. 195) carry coal down stream as far as New Orleans, where ocean steamers often take on hundreds of tons apiece to run their engines across the seas.

Many factories for making various kinds of things have been built near both of the Pennsylvania coal fields. Thus the coal fields help to make manufactures, and to provide work for many, many people.

197. England's coal trade.—From 1850 to 1900, England was the greatest manufacturing nation of the world. For a long time she dug more coal and made more iron than the United States did. But the United States now leads all Europe in coal production. Although England used to dig all her iron ore at home she now buys much of it from Spain, Sweden, and Norway. (Fig. 204.) In

all these countries there are ore mines near the sea, handy for ships.

Although the United States mines the most coal, England exports more of it than any other country of the world. How does this happen? Because ships go from many lands to England full of grain, lumber, and cotton, and many of them take back coal.

198. Coal in other foreign lands.—Many countries have no coal. Not one of the countries on the Mediterranean Sea has enough for its own use. They all buy it from England. Even during the World War, when ships were so very scarce, many of them had to be spared to carry coal from England to Italy. (Fig. 205.) In Europe there is one small coal field that lies in three countries—France, Belgium, and Germany. Since coal makes manufacturing easier, this coal field is dotted with factory towns. No country in South America has enough coal for its own

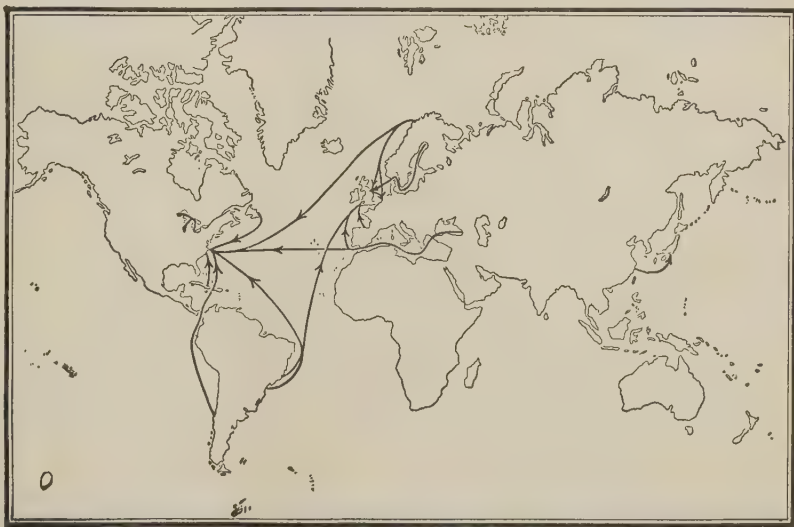


Fig. 204. Map of the world showing iron ore trade routes.

use. These countries, too, must get coal from over the sea. Australia has some to spare, and she sends it across the wide Pacific to supply the people of Chile, in South America.

QUESTIONS

1. Have you ever seen a blacksmith shape an iron horseshoe? Tell about it. Why must he heat the iron red hot? How does he make his fire burn brightly? 2. Race with your classmates to see who can make the longest list of things made from iron or steel. 3. Which burns with less smoke, hard or soft coal? Where is hard coal found? 4. Describe the journey of a piece of iron ore from the mountain side in Minnesota to an iron furnace in Pennsylvania.

5. What things are near your school that could not be there if iron was as expensive as it used to be, when a man had to work all day to buy two pounds? 6. Can you trace the route by which coal used in your neighborhood comes? (The map on a railway time-table will help you do this.) 7. Trace the route of a ship bringing iron ore to Philadelphia from north-eastern Sweden; to Baltimore from Greece; from Newfoundland; from Santiago in Cuba.

8. Why are the eastern cities less smoky than the cities of western Pennsylvania and the North Central States? 9. On the map of Europe (Fig. 315) find five seaports on the Mediterranean Sea to which England sends coal. 10. What three ports might ship Pennsylvania coal to Cuba or the Panama Canal? (Fig. 40.)

A GREAT TRADING CITY AND A GREAT TRADE ROUTE

199. **Busy New York.**—New York is a big and busy city. To shelter its office workers, buildings have been built forty stories high. So many people crowded the street cars that elevated railways, as high as the second or third story windows of the houses, have been built. Even these cannot carry all of the people who need to ride, and some of the streets now have a third set of railways, running in tunnels, called subways. Passengers must go down two or three flights of stairs to reach the trains. Even these subway trains are often so full of people that every bit of standing room is taken, and not another person can be pushed into the cars.

Thousands of men are busy every day loading and unloading ships, loading and unloading freight cars, driving trucks and wagons about the streets, running barges in the harbor from ship to ship, and from ship to wharf.

At one time you may find in New York hundreds of merchants from places as far away as Florida, Oklahoma, Dakota, and California. They have come to buy things that have just come in from Europe or from American factory towns. Thousands of people are busy in the wholesale stores writing letters, keeping accounts, boxing up goods, and sending them away to retail stores throughout the country.

Why is New York such a good place to buy and sell? Go back to the early days for a moment.



Fig. 205. Map of the world showing coal trade routes.



© Brown Bros., N. Y.

Fig. 206. Looking at the business center of New York from the top of the Brooklyn pier of Brooklyn Bridge. The Woolworth building at the right, one of the many office buildings, is the highest building in America.

200. Settling the Central States.—As soon as white men had explored North America enough to know that west of the eastern mountains there was a great, rich, level plain, they wanted to own that country; they knew that some day it would have a large trade.

As time went by, many settlements were made along the Ohio, the Mississippi and the eastern Great Lakes. More people kept coming from Europe, both English and French. People from the Atlantic Coast settlements joined them, until there were many people living west of the Appalachians.

To trade with these settlers, the people along the coast had to go across the mountains by slow wagons. The only water routes were the St. Lawrence River and the Mississippi. But look at your map (Fig. 51) and see how far apart the mouths of these rivers are, and also how far they are from Boston, New York, Philadelphia, and Baltimore, the cities where most of the

business on the coast was being done in those days. If only they had had an easy waterway through the mountains! Remember there were no railroads anywhere then. They decided the only thing to do was to build canals, as the Europeans had done for many years. But the mountains were so high that crossing them by canals would be a very hard piece of work.

The story of how they were built is a very interesting one.

201. Building canals over the Appalachians.—The people of Washington City started to build a canal up the Potomac River and over the mountains to Pittsburgh; the people of Philadelphia built a canal from the Delaware to the Susquehanna and up the Juniata, a branch of the Susquehanna; the people of New York built the Erie Canal from Troy up the Mohawk River, a branch of the Hudson.

The map (Fig. 198) shows why the people of New York won in this race of the canals. There is a low place in the eastern



Photo, Brown Bros., N. Y.

Fig. 207. Ocean steamships unloading their cargoes into warehouses. The other boats are barges and canal boats. Where will they go?

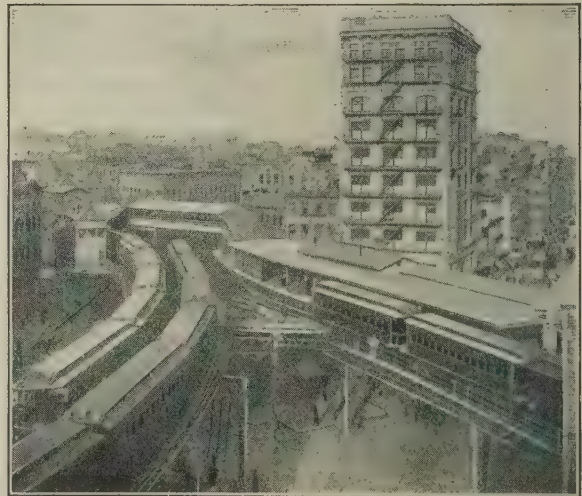
highlands in New York State. Between the Adirondack Mountains on the north and the Allegheny Plateau on the south is the valley of the Mohawk River. The canal from Albany to Buffalo followed the Mohawk and had to climb only four hundred and twenty feet above the Hudson to get across the divide. The routes from Washington to Pittsburgh, and from Philadelphia to Pittsburgh, had to climb mountains over two thousand feet high.

The boats on the Pennsylvania canal were made in two parts that hooked together in the middle. When they came to the foot of the mountain, they were lifted out of the water on wheeled trucks and hauled up the mountains by cables drawn by stationary engines. Fig. 209 shows how the canal boats climb up from the Hudson to Lake Erie.

202. The Erie Canal.—The Erie Canal, which was finished in 1825, was a success. The others never amounted to much. The trade of the Great Lakes came by way of the canal to the Hudson River, and on it to

New York City, which grew faster and became much larger than any other city in America. The wheat, corn, oats, and meat that went to the lake ports from the farms of the Central States were sent by canal to New York, and from New York to Europe. The merchants of New York imported goods from Europe that went by water to Albany, Buffalo, Cleveland, Chicago, and Duluth, and, after a time, by rail to places as far away as Denver and Seattle.

In 1918 New York State finished the work of widening and deepening the old canal. It is now called the New York Barge Canal, or sometimes the Erie Barge Canal. A four-track railroad now follows it all the way to Buffalo. Many other railroads also carry freight and passengers to New York City from the



Photo, Brown Bros., N. Y.

Fig. 208. Junction point of elevated railroad lines, Chatham Square, New York City. In the tall building you would find either offices, or work rooms where clothing or something else is made. Where did the steel for this railroad come from? the lumber? the cement?

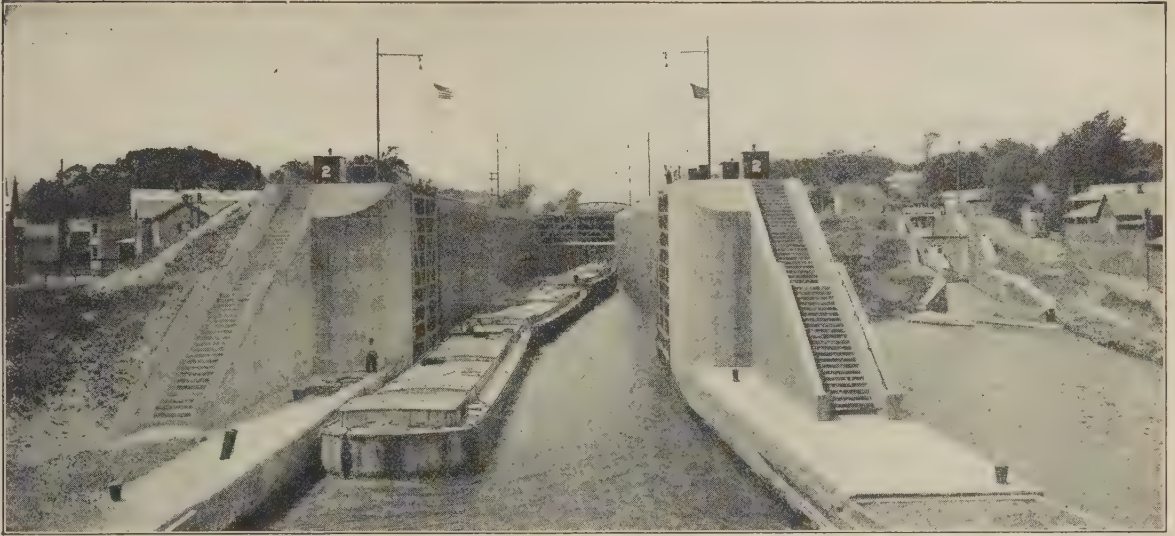


Photo. Publishers' Photo Service

Fig. 209. A lock in the New York Barge Canal. The upper gates are shut and the lower ones are open. Two smaller locks of the old Erie canal are at the right. You can make a little canal with mud locks.

Central States and the Middle Atlantic States. (Fig. 212.)

The harbor of New York is one of the finest in the world. The largest ships can steam into it, and ships from many countries can be seen there every day. (Fig. 213.) You see now why New York became the greatest trade center in America.

203. Trade makes manufacture.—Since New York is such an easy place to which to ship things both by land and by sea, it is also a good place for factories to get raw materials, and an excellent market in which

to sell manufactured goods. You remember that New York is near to the coal fields. Thus it has become the greatest manufacturing city in America, as well as the greatest trading city. Thousands and thousands of people are busy in New York making clothes and hats and many other things for the wholesale stores to sell. No other State makes as much clothing as does New York State.

There are several cities near New York, such as Jersey City, Newark, Hoboken, and Yonkers, that have grown big for the same reason that New York has grown. They are really on the same harbor, which has many miles of shore where wharves can be built. New York is only one of a great group of cities having more people than any other city or group of cities in the world. In these cities you can find factories that make almost everything you can think of from lead pencils and pins to locomotives and ships.

Many of the people who work in New York and Brooklyn live in outlying towns (suburbs) where they can have more room



Photo. Doubleday Page Syndicate, N. Y.

Fig. 210. Light ship anchored outside New York harbor to guide incoming vessels.

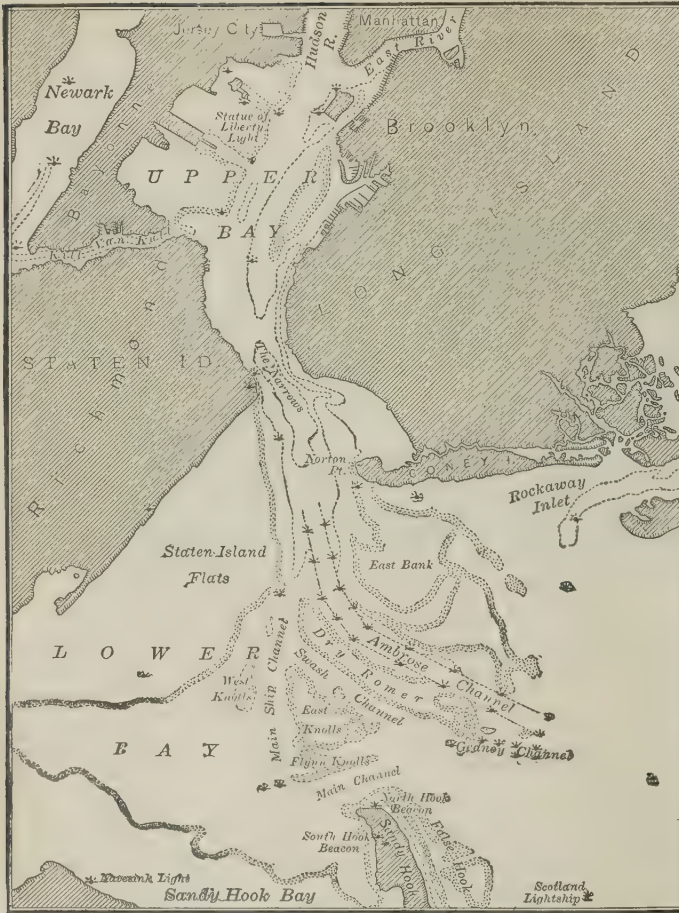


Fig. 211. A map such as pilots use in taking ships in and out of New York harbor. Buoys mark the channels which have been dug deep enough for the big ocean liners. At night, the light-houses and light buoys are the pilot's guides. See Sec. 251.

for houses and for the children to play. Business houses in the city need so much room that hundreds of thousands of families live in upstairs apartments and do not have any yards at all.

204. Money center.—After New York had greatly increased its import and export trade, and its factories, its banks grew larger and had more money in them than the banks of any other city in America. It became the money center of the country. Many thousands of people work in the banks, counting money and keeping books.

205. Other cities along the canal route.—Along the water route from New York

to Buffalo there is a string of smaller cities. They have prosperous factories, because the canal and the railroads so easily carry in food from the Western farms, bring in raw materials, and carry out the finished products.

Buffalo and the other cities as far east as Syracuse run some of their factories with electric power that comes by wire from water-power plants at Niagara Falls. These falls are at the place where the Niagara River, carrying all the water that pours out of the Great Lakes, tumbles over a ledge of rock 164 feet high and nearly a mile wide. Niagara Falls are one of the wonders of the world. Thousands of people visit them each year. Some of the water is used for power, but the falls are still beautiful.

The factories in the many cities between New York and Buffalo make things that are used by people everywhere in the country. Schenectady makes electrical machinery to be used in factories both east

and west. Johnstown and Gloversville were settled by Scotch glove-makers about 1760, and gloves are still the chief article these towns have to sell. Rochester, built around the waterfalls on the Genesee River, has many flour mills and clothing factories. It also manufactures cameras and photographic supplies.

At Syracuse there is a layer of rock salt, deep down in the ground. Water is pumped down into the rock, where it dissolves (takes up) some of the salt. Then the water is pumped back again and evaporated to get the salt, which is used in chemical works.

You remember that Buffalo, at the western end of the Erie canal, handles a great deal of grain and lumber that come in lake steamers from the North Central States. (Sec. 99.) Buffalo also makes iron and steel, and has many kinds of factories. It is the second city of New York State and the fourth city of the Middle Atlantic States.

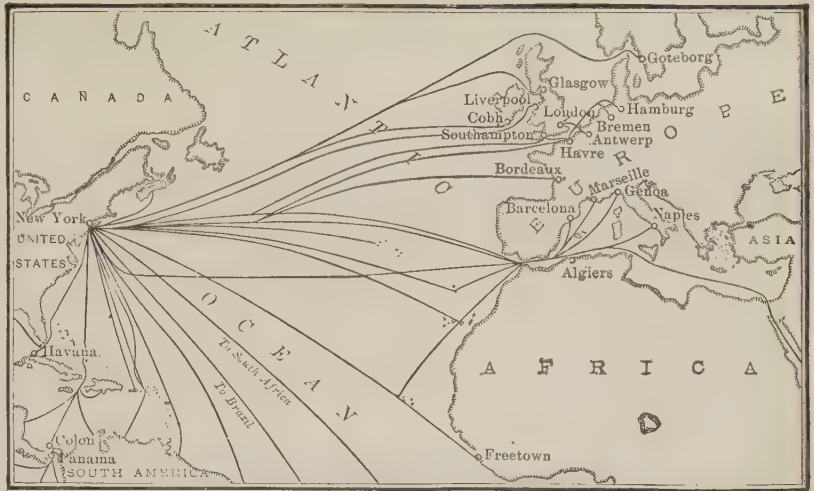


Fig. 213. Map of the North Atlantic Ocean showing the numerous trade routes connecting New York City with the chief seaports of Europe, Africa, South America, and the West Indies.

QUESTIONS

1. Find the tallest building in the picture of New York City. (Fig. 206.) It is fifty-five stories high. From the top of this building, what bodies of water would you see? (Fig. 211.) 2. Why must the people in New York have such high buildings? 3. How many stories has the tallest building where you live? 4. In the picture of the New York Barge Canal (Fig. 209) find three locks.*

* For the teacher: explain how a boat goes up and down steps by means of locks.

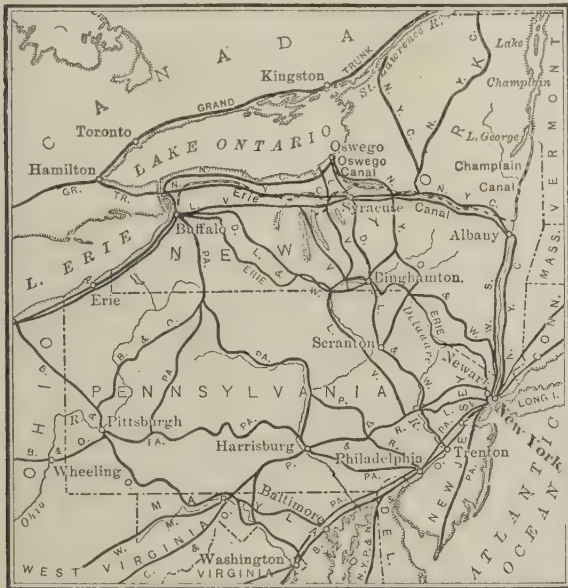


Fig. 212. Some of the railroads of the Middle Atlantic States. See how they all lead to New York. What canals can you find?

5. Through what waters do boats go from the East River piers (Fig. 206) to Boston and Providence? How many ocean steamers are moored at the dock in Fig. 207? 6. Why are lightships anchored along the Atlantic coast? 7. Trace the railroad that follows the Hudson River and the Barge Canal from New York to Buffalo. (Fig. 212.) Name five cities on this route that are very important. (Fig. 198.) Why have so many people come to this valley to live?

8. Why are the people at your home not crowded together as are those in New York? 9. Would you rather live in the city or in the country? Why?

GENERAL VIEW OF THE MIDDLE ATLANTIC STATES

206. Large population.—We have been talking about coal and iron in the Middle Atlantic States, and about the manufactures and trade of the cities served by the New York Barge Canal and New York Harbor. We have seen that these states have several kinds of cities: those that depend on coal alone, on iron, on trade, or on manufacturing. Taken all together, these cities have very many people.

The three Middle Atlantic States together are not half as large as Texas, but they have more people than have all the



Courtesy of Niagara Falls Power Company

Fig. 214. Niagara Falls, showing the American Falls at the left, on the American side, and the Horseshoe Falls in the center, on the Canadian side. Power houses for making electricity are located on each bank below the falls. The current is carried to many cities in New York State and Canada, where it is used for light, heat, and power.

South Central States. New York State alone has more people than all the plateau and Pacific States combined.

Besides the opportunities for manufacturing and for trade, there is another reason why people live in the Middle Atlantic States. These states are good for farming.

207. Climate.—The Middle Atlantic States have plenty of rain, and the summer is warm enough for agriculture; but in some of the highlands, as frost comes late in spring and early in autumn, it is too cold to grow corn. The winters are cold. In the northern part, the snow covers the ground for four months, and people often go to the Adirondacks at Christmas time for winter sports, such as coasting, skating, and skiing.

208. Surface.—These Middle Atlantic States are not as level as are the Central States. One section will be high and mountainous, while in other places there are plains or valleys. You remember that

we crossed these states in our journey across the Continent from east to west. (Sec. 36.) First we crossed a level plain; then we saw rolling hills, and then mountains and plateaus with coal mines and forests. During all this time we were in the Middle Atlantic States. In a region with a surface so varied, we should expect to find a variety of occupations.

209. The level Atlantic Plain.—East of a line from Philadelphia to New York is the level, sandy, Coastal Plain, which includes Long Island. Much truck is grown here, but large parts of the plain are so sandy that farmers do not use it, and it is still covered with pine trees.

The bathing is fine on the sandy beaches along the coast. Here are found Long Branch, Atlantic City, Cape May, and many other seashore cities, to which thousands of people from inland places go in summer for their vacations.

210. The rolling hills.—

To the west of the Coastal Plain is the Piedmont, a land of rolling hills like that which we saw in the South Atlantic States. Its soil is rich, so that grass grows well upon the hills and meadows. Many dairy farmers live here, sending their milk to Philadelphia, Trenton, and New York. Similar rolling hills are found in the higher land of the Appalachian plateau in southern New York and northern Pennsylvania.

Here, too, the farmers keep cows and send great quantities of milk, butter, and cheese to New York, Buffalo, and the cities along the Erie Canal. At Binghamton, N. Y., the largest shoe factory in the world is located.

It is in the eastern part of Pennsylvania, near the cities of Scranton and Wilkes-Barre, that we find the mines of hard or anthracite coal. (Sec. 196.) Near Bethlehem there are quarries of limestone and rocks like slate, which are very good for making cement. This is done by grinding the rocks to bits and burning them with coal from the hard coal fields not far off.



Fig. 215. A dock in New York to which carloads of farm produce from all over the United States are sent.



Courtesy of Penna. Railroad

Fig. 216. Shipping potatoes from a New Jersey railway station.

Much cement is made in this valley for use in Philadelphia and New York. Some of it was shipped from these cities to help build the Panama Canal.

Not far from these cement mills is a place called Slatington. The rock there is slate, and splits up into thin layers that are used for making roofs, blackboards, and writing slates.

211. The mountains and plateaus.—

The Appalachian Mountains and Plateaus reach westward from Harrisburg to Pittsburgh, and northward to the valleys of the Hudson and Mohawk Rivers. We have seen (Sec. 196) that the part of the plateau which lies in western Pennsylvania is a great soft coal field with many mines and mining towns.

Near the Hudson River, the highlands are called the Catskill Mountains. They are very beautiful, and many people from the cities go to the hotels there for their summer vacations.

In central Pennsylvania, and some parts of New York where the country is too rough for many farms, there used to be fine forests, but it is now a kind of green



Fig. 217. Milkers at work in a dairy barn for city supply. If you call a cow a factory, what raw materials does she use? What products does she produce?

desert. The trees have been cut down and made into lumber, and miles and miles of the land are made worthless by the forest fires which kill all the little trees every year or two. That country needs more Boy Scouts to protect things. By and by we shall need the trees that are being killed by these fires.

To the north of the Mohawk Valley with its great canal are the forest-covered Adirondack Mountains. We have read about them in the story of lumbering. (Sec. 94.) The land is too rough for farms. One county there has in the winter only three people to each square mile; but in summer it has many more people who live in hotels, for this is a very beautiful region of forests and lakes. Streams flowing out of the Adirondacks have many falls, and mills use the water power from them to saw the mountain forest logs into lumber, or grind them up for paper.

212. New York fruit.—The plain from Syracuse to Buffalo is one of the best

farming sections in the United States. It is nearly level and has a good, loamy soil, easy to plow. Fruit trees do well near lakes. Therefore apples, peaches, pears, and cherries are grown in great quantities along Lake Ontario. Many canning factories are there. The narrow plain along the south shore of Lake Erie from Buffalo to Cleveland grows more grapes than all the rest of the United States east of California. California is the only state that grows more fruit than New York State. Barrels of New York apples go to places as far away as Florida, Louisiana, Iowa, and even Europe.

213. Why the population is large.—We now see why the Middle Atlantic States have so many people. They have some good farming country to grow food; they

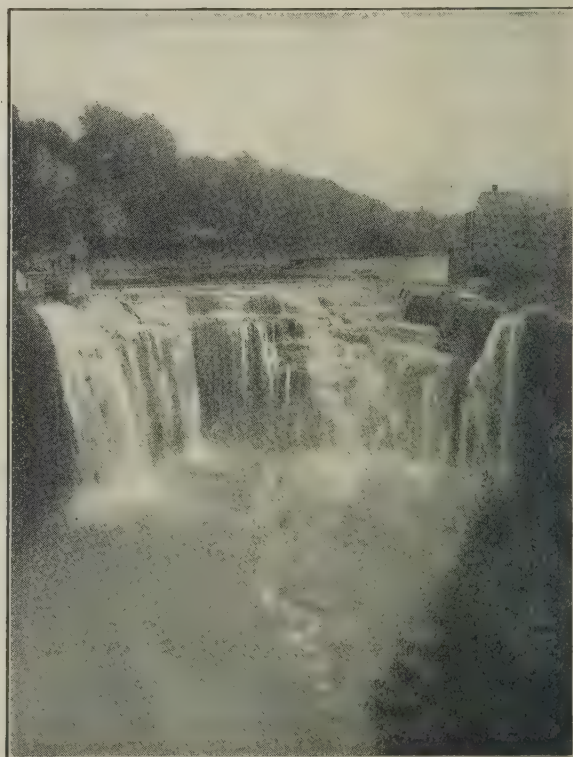


Photo. Marks & Fuller, Inc., Rochester, N. Y.

Fig. 218. Falls in the Genesee River, at Rochester, N. Y. Name two reasons why this is a good place for flour mills.



Courtesy of Lake Placid Club

Fig. 219. Skiing is one of the sports that Americans have borrowed from the Norwegians. Each winter people go to the Adirondacks, to upper New England, and to Switzerland for winter sports.

have lake ports, Buffalo and Erie, to bring them goods from the Great Lakes; and the big seaports of New York and Philadelphia, to bring in materials from over the sea. They have the Erie Barge Canal to carry the traffic of the lakes to the sea, and the traffic of the sea to the lakes. There are also many good railroads to other parts of the country. They have coal and iron, the greatest of all raw materials for manufacturing.

It is easy to understand why Philadelphia became the third city of the United States, even if she did not, like New York, have a canal to give her the trade of the Great Lakes. Ships from many countries come to her harbor on the Delaware. She is near to the coal fields and iron furnaces. Her factories make many kinds of things. Thousands

of people are making woolen cloth; other thousands make carpets, machinery, and leather. On the outskirts of the city we see tanneries beside fields covered with drying skins, for Philadelphia is a great leather center. This city also has the largest locomotive plant in the world. Many famous vessels have been built in the shipyards of Philadelphia, and of Camden, just across the Delaware. Philadelphia has also a good food supply, for the sandy lands of New Jersey grow fine fruits and vegetables, and the neighboring counties of

Bucks, Chester, and Lancaster have long been famous for rich soil and large crops.

Many travelers go to Philadelphia to see the Liberty Bell and Independence Hall, the place where the founders of our government said the United States should be a free country and signed the Declaration



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Fig. 220. Lake Placid, a glacial lake in the Adirondack Mountains. This lake was once a valley. The glacier dammed it up with dirt. What became of the hills in this valley?



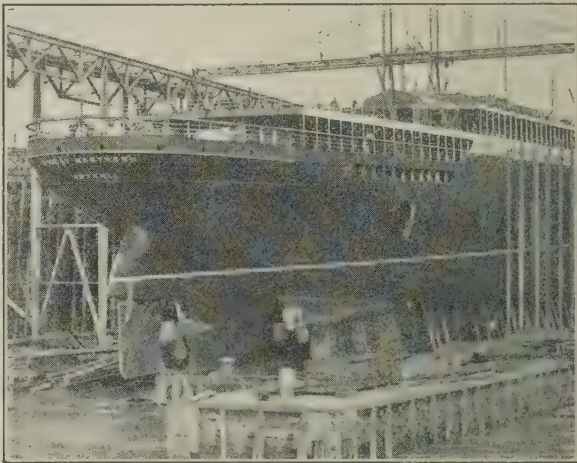
Photo. Doubleday Page Syndicate, N. Y.

Fig. 221. Picking apples in western New York. Did the Erie Canal help apple growing near Niagara?

of Independence. Philadelphia was the first capital of our country.

Trenton, the capital of New Jersey, has many potteries, where dishes and earthenware are made from fine, pure clay. At Paterson, New Jersey, there are machine shops in which many men are employed. Many of the women of the families of these

workers are employed in the silk mills that have been built at Paterson because the machine shops which were already there had brought a large population to that place. There are now silk mills in Scranton



Courtesy of Wm. Cramp Sons, Phila.

Fig. 223. Triple screw steamship nearly ready to be launched, Philadelphia. The traveling crane overhead carries materials. See how small the man near the screw appears.

and other Pennsylvania towns, and when the mill whistles blow the women go to the silk factories and the men go to the machine shops, mines, and cement works.

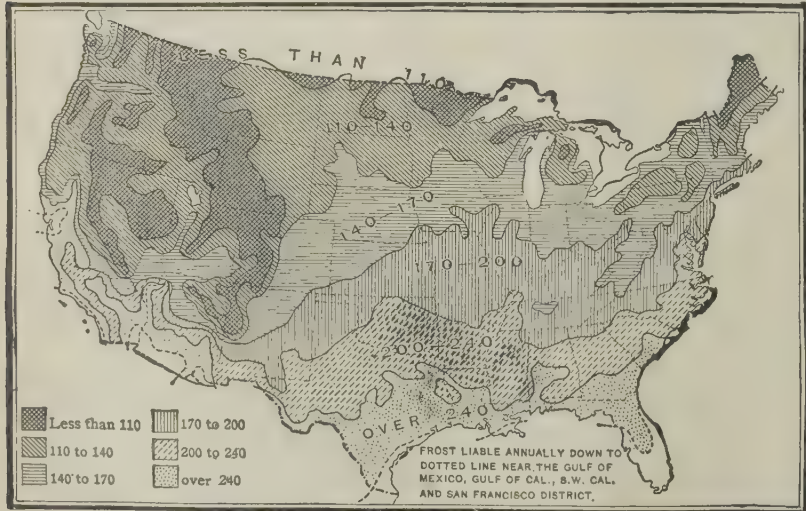


Fig. 222. Map showing the number of days between the last frost in spring and the first frost in fall. How long is the growing season where you live? Which of your crops needs the most time to ripen?

You can now see why there is a great trade between the Middle Atlantic States, producing coal, iron, and manufactures, and the Central, Western, and Southern States, producing food and raw materials. Perhaps you can name some of the articles in this trade.

QUESTIONS

1. Where is the ship (Fig. 223) being built? To what cities in Oregon or Washington might she sail. Across what ocean and between what countries will this

Atlantic coast ship probably sail?
 2. What raw material used in making this ship came from Pennsylvania? 3. Of what are the beams, pulleys and boilers in the locomotive factory (Fig. 224) made? the tools? 4. What waters does the Erie Barge Canal connect? 5. What river does each railroad between New York and Philadelphia cross? Give two reasons why this river is important.

6. When the snow melts on the Adirondacks, in what directions and into what waters does it flow? 7. Why are most of the lumber and paper mills of New York State located on mountain streams?

8. Measure on your map the distance from New York to Philadelphia; from your home to New York. 9. What mountain system crosses the Middle Atlantic group of states?

GENERAL QUESTIONS

1. Name and bound each of the Middle Atlantic States. Give their capitals. 2. Draw a map, free hand, showing the boundaries of the states and the locations of the principal cities. 3. What groups of states touch this group? (See map Fig. 198.) 4. List the principal things that the people of these states have to send to



Courtesy of Baldwin Locomotive Works, Phila.

Fig. 224. A locomotive being carried by an overhead crane. Baldwin Locomotive Works, Philadelphia.



Courtesy of Curtis Publishing Co., Phila.

Fig. 225. Independence Hall, home of the Liberty Bell, Philadelphia. The Saturday Evening Post and the Ladies' Home Journal are published in the large building in the background.

other states. Also list the things they need but do not produce. 5. List the things that you get from these states.

THE NEW ENGLAND STATES

HOW FISHING HELPED START MANUFACTURING

214. The old days and the new.—When the first settlers came from England to New England, most of them made their living by farming. That was the only thing there was for them to do, except go fishing or hunting. Every farmer grew the things he used. He grew wheat and corn for his own bread; pigs, sheep, and cattle for the family meat; flax and wool for cloth to be woven by the women for the family clothes. The farmer himself often built the house, built the wagon, shod the horse, and made shoes for the children. He cut logs from the farm woodlot, and made his house; fastened it together with wooden spikes; roofed it with home-made wooden shingles; and heated it by a wood fire. White men lived in this way in New England for two hundred years before they began to



Courtesy of Boston & Main R. R.

Fig. 226. The seacoast at Mt. Desert Island, Maine. The boat sails out of the cove, or little bay, past the wooded peninsula, through the strait, by the islands, into the big ocean.

build many factories and to live in cities, as they now do.

How different to-day is from that early time! Instead of living on farms, most of the New England people live in cities. Instead of one man having twenty trades, it takes twenty men to make one shoe. One man cuts out the pieces for the heel, another tacks them together, a third cuts out the upper leathers, the fourth sews two of the pieces together, and so on, until each of many men has done his small part toward making the shoe. That is the way in all factories; each man does only a small part. Which way makes the more goods, this or the old way? Which way of living do you think would be more interesting?

Every day hundreds of freight cars rumble into New England loaded with flour, meat, oatmeal, oranges, corn, bran, cottonseed meal, coal, iron, lumber, cotton, wool, and leather. The New Englanders pay for all these things with their factory goods, which are now sent to all the states, and to various foreign countries.

215. Small states and many cities.—Manufacturing, which began in the New

England States, is spreading to the Middle Atlantic States, the North Central States, the South, and elsewhere. But in no other part of our country does such a large part of the population live in cities and make its living in factories.

This small section of the country has only one-fiftieth of the surface of the United States, but it has sixteen of the one hundred largest cities.

The six New England States together are not so large as any one of the Plateau or

Pacific States. California is nearly two and one-half times as big as all New England. Most of the area of New England is in forest, with very few people in it, but there are so many cities that Massachusetts alone has more people than all the Plateau States together.

216. The New England fishermen.—How does it happen that New England has so many factory towns? The codfish helped to start them, but you would scarcely guess how he did it. The early New England settlers had one thing that the people in Europe wanted. It was dried codfish. Taking the codfish to market caused the people to become traders. Then after they became traders, they became manufacturers so that they might have more things to sell. This chapter will tell you how all this happened.

You remember that fishermen have caught cod near Newfoundland ever since the time of Columbus. The fishermen of New England also caught these fish in the early days. In fact, they still catch them, for there are good shallow places (fishing banks) off the coast of New England, and

the market for dried codfish is good. See if there isn't some codfish in your grocery store. Sometimes the New England fishermen go several hundred miles, all the way to Newfoundland, to do their fishing. They take salt or ice with them to keep the fish that they catch. Mackerel, herring, bluefish, and lobsters are also caught along the coast of New England. At some places, the fish are canned. Most of the people of Gloucester, Massachusetts, are busy all the time catching fish, salting them, or fixing up fishing tackle. Down near the wharves of Gloucester, one can smell fish all the time. Many fishing boats go out from Boston, Marblehead, and Portland, and from many small towns along the Maine coast.

217. The lighthouses.—The coast north of Cape Cod has many bays and harbors that boats can enter. But this part of the coast is very rocky, and there are many islands and capes that might wreck the boats in times of fog and storm. To make sailing safe for fishermen and other sailors, the government has built lighthouses along the shore at places that are dangerous for ships. The boatmen can tell just where they are by seeing the lights. A good sailor knows his coast and its lights as well as you know your way to school. In times of fogs, when the lights cannot be seen, bells and fog horns tell the sailor that his ship is getting near to danger. Not only the New England coast, but the sea coasts of all civilized countries have lighthouses to make sailing safe near their shores. The lighthouse keeper has a very lonely life.

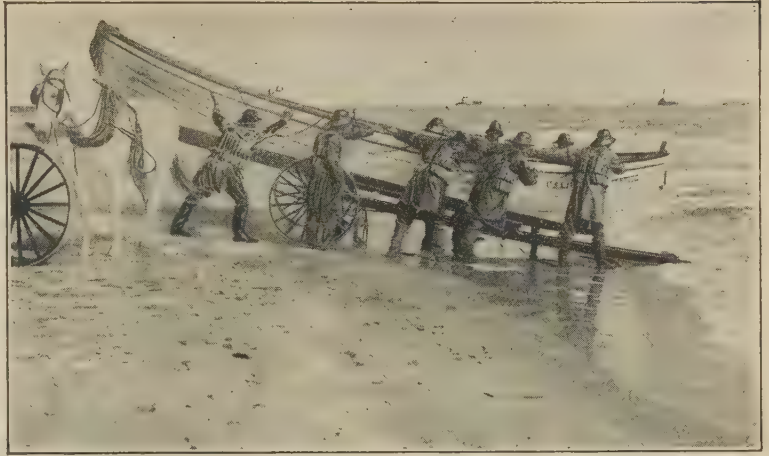


Fig. 227. The crew of a life-saving station launching a life boat in the surf. The Government pays these men to save the lives of shipwrecked sailors.

Courtesy of U. S. Coast Guard

218. Fishing makes trading.—The fishing business helped to make traders of the New England colonists. They had to build good strong boats to sail out to the fishing banks. They invented a kind of easy sailing boat called a schooner. When they had more dried cod than they could use at home, it was easy to sail in their good strong boats over to England, or down to the West Indies, to sell fish, and bring back English goods or West Indian sugar and molasses. The people in the West Indies also wanted lumber, which the New England forests furnished. As ships went out every year with fish and lumber, the traders began to take along shoes that the shoemaker had made, tinware from the tinsmith, clocks from the clockmaker, guns from the gunsmith, and knives from the blacksmith. For these reasons New England got a start at manufacturing before any other part of the country. The people's ships gave them a chance to sell the things they made by hand in their farm and village shops.

Then Mr. Samuel Slater came from England in 1790 (Sec. 185), and showed the New Englanders how to make cotton cloth

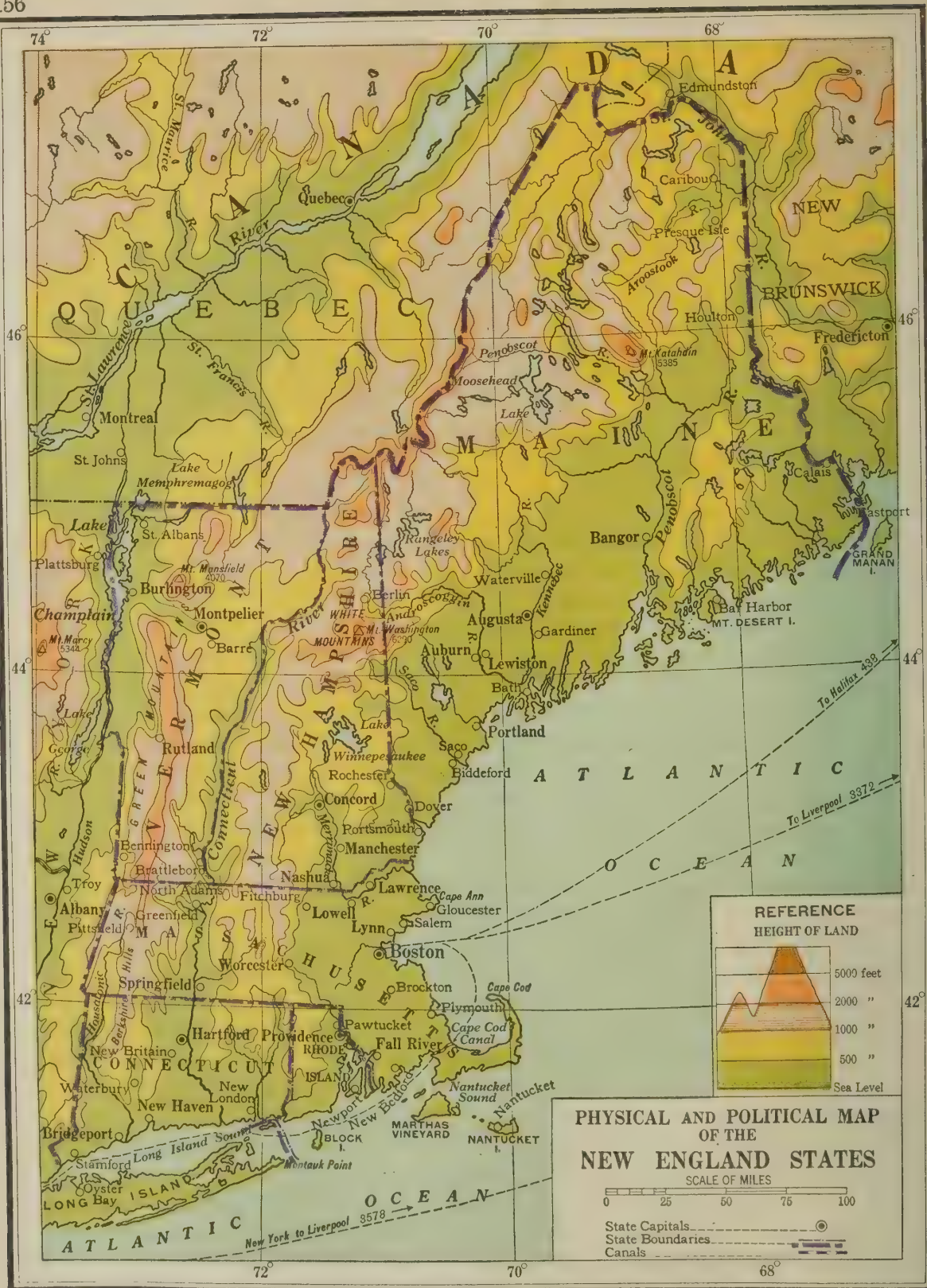


Fig. 228

by machinery. Soon after that, boats went sailing down to Charleston and Savannah to get bales of cotton. This they brought back to be made into cloth in the mills of New England, and when the boats again went south after more raw cotton, they took along some of the cotton cloth, and some knives, too, and other manufactured goods.

219. Trading makes manufacture.—When the Erie Canal and the railroads came, the boats and trains gave the men who owned factories a chance to send their goods west of the mountains, and to get food from the western farmers in return. This made more business for the factories, and many New England farmers left their farms and went to work in the factories by the waterfalls. The people who worked in the factories needed to live near their work, and thus many towns grew up around factories and mills. Now you see why New England has more of her people living in towns than has any other part of the United States. Count the New England harbors.

As city people must buy almost everything they use, it takes a great trade to support all these people in the New England cities. Hundreds of trains now go into and out of New England every day, and each year many hundreds of ships sail into her harbors from other cities in America and from foreign lands. New England would have less trade if she had more farms to feed herself.

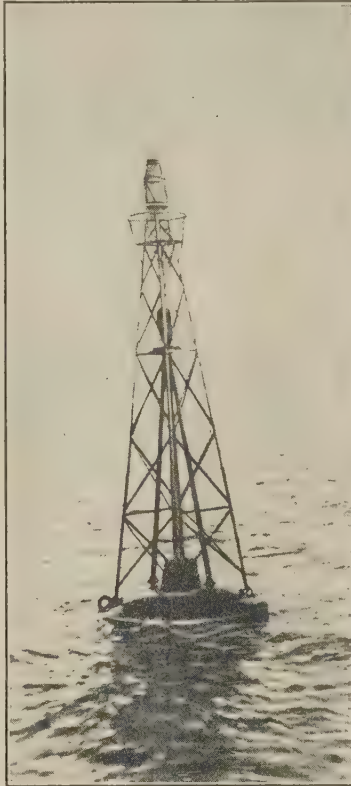
QUESTIONS

1. On the physical map of North America (Fig. 48), trace the fishing boat route from Boston to Newfoundland. In what direction do they sail? 2. What West Indian island lies directly south of Boston? (Follow the meridian.) 3. Do you watch the weather as closely as the boys in a codfishing town? Why? 4. Find in a magazine or store the address of a firm selling codfish. 5. List the things a codfishing schooner carries when she sails for a two weeks' cruise to the Grand Banks. 6. How did fish increase New England's factories?

7. What are the men of the Life Saving Station (Fig. 227) doing? How are they dressed? What will they have to do? 8. Draw a picture of a lighthouse on a rocky point. Name it from one of the New England capes or points of land.

THE MANUFACTURES

220. Ports and water power.—We have already seen that the fishing vessels helped the people of New England to sell their goods, and brought them raw materials for their factories. This gave manufacturing an early start. The many good harbors on the crooked coast also helped very much in this, for ships can make a landing



Courtesy of U. S. Bureau of Lighthouses
Fig. 229. A whistling buoy off Point Judith, R. I. Every wave makes it whistle.

close to any town that is near the New England shore. Some countries have long, straight coasts with no place for a ship to land. New England also had another great help in starting her factories. Almost every New England river and creek has many waterfalls, so that it was easy for the people to have water wheels in many, many places to run their factories. That is why New England has so many cities rather than a few big ones. But



Fig. 230. A modern woolen mill at Lawrence, Mass.

Photo. Brown Bros., N. Y.

there is now so much manufacturing in New England that many of the factories in southern New England are run by coal, instead of by water.

221. Fine manufactures.—New England has no mines of coal or metal. She has to buy both of these things. Therefore she makes metals into fine and costly goods to sell, so that a little metal brings a lot of money. Look at some boxes in the hardware store, and you will see many Connecticut, Rhode Island, and Massachusetts names. These states send all over the United States, and all over the world, skates, rifles, pistols, cartridges, hardware (Bridgeport, Connecticut), machinery (Worcester, Massachusetts), clocks (Waltham, Massachusetts), and brass goods and jewelry (Providence, Rhode Island).

The skilled workers of New England make so many, many kinds of things that the mere list of them would fill two chapters in this book. In the one city of

Worcester, Massachusetts, the census taker found that the people were manufacturing 2200 different articles.

You remember (Sec. 94) that the highlands of New England are a forest country, where lumbermen in logging camps pile logs beside the streams for the spring log drive. Many of these logs are made into paper, in mills beside the waterfalls. Sometimes, when heavy snow storms block the New England railroads, the newspapers of New York and Philadelphia do not have paper enough to print all the advertising they can get.

222. New England trades with all the states.—The industries of New England show how each group of states depends on



Fig. 231. An old-fashioned New England overshot water wheel and sawmill.

every other group. In Fall River, New Bedford, and Lowell, Massachusetts, are great cotton mills, where thousands of men, women, and big boys and girls earn their living by making cloth from Southern cotton, and selling it to the people in Maryland, Montana,



© Underwood & Underwood

Fig. 232. Hundreds of looms weaving cloth in a New England cotton mill. (See Figs. 233 and 420.)

and other states. Lawrence, Massachusetts, and Providence have many mills making cloth out of wool that comes from the Plateau States and from far-away Australia and Argentina. For many years New England made more cloth than all the rest of the United States, and even now every dry goods store has New England thread or fabric in it.

The people of Massachusetts used to wear shoes made from the skins of their own animals. Now the city of Boston is a great leather market, to which ships bring skins from many foreign countries. In Boston and neighboring cities, tanneries make the skins into leather, and huge factories turn the leather into boots and shoes that go to millions of people who do not live in New England—even to people in Australia and other countries across the seas.

Name one or two important articles that New England must buy from each of the groups of states in order to keep all her factories running and her people fed.

The New England factories have needed so many workers that people have come to work in them from Portugal, Italy, Poland, Ireland, Canada, and other countries. One can hear foreign languages in many New England factory towns.

Boston is the largest New England city. It has steamship lines to many countries. A canal has been dug across Cape Cod, to shorten the boat journey to New York and southern cities. (Recall Sec. 188.) Boston, however, has no such waterway to the interior as New York has, and so it has not grown so large.

QUESTIONS

1. Has New England or Iowa more little streams? more waterfalls? more mountains?
2. Write down the chief differences between Iowa and New England.
3. What is the most common building material around your home? Does it come from near-by or from a distance?
4. List all the things that New England buys to use in her factories. Find something in your home or in the store made in New England.



Courtesy of National Park Service

Fig. 233. The handloom method of weaving woolen blankets which is still used by Navajo Indians, who wear cloth woven on machine looms.



Fig. 234 A landscape at Wilton, New Hampshire. Mt. Monadnock appears in the distance. Contrast this scene with Figures 52 and 53.

GENERAL VIEW OF THE NEW ENGLAND STATES

223. Soils.—New England depends on manufacturing more and on agriculture less than any other group of states in our country. This is strange, because the people of New England began as farmers. Farming began in Massachusetts three hundred years ago; yet most of New England is still in forests rather than farms. On the other hand, Iowa, settled only one hundred years ago, is now nearly all in farms. What makes this difference? It is because New England is hilly, and the land rocky and hard to plow, while Iowa is level, and the land free from stones, and easy to plow. This difference tells you why Iowa and the other Central States are now so far ahead of New England and the Middle Atlantic States in farming.

There are two reasons why New England is so rocky. One is that most of the rocks of which this country was made are granite, which is a very hard rock indeed. Granite does not easily break up to make soil (See Sec. 69). In Philadelphia, at the University of Pennsylvania, there is a

granite step on which a thousand people have trod every day for forty years, and the step is still unworn. But from the wall of a sandstone building not far away you can pick off layers of the sandstone with your fingers. This shows that sandstone breaks up more easily than granite, and tells us why the soil is deeper in those places having soft rocks than it is in places having hard rocks. The hard granite rock of New England is splendid building stone, and much of it is quarried and sold for that purpose; but it is too hard to break up rapidly into earth, so the soil is thin in many places. Vermont has great quarries of granite, and also of marble, a rock used for making beautiful buildings.

Most of New England is mountainous or hilly, and for this reason the soil is thin. When rain falls on hillsides and mountains, it runs so swiftly down hill that it easily carries particles of soil with it. The soil left on the hillsides is often thin, while it may be deep at those places in the valleys where the running water has carried and dropped the earth. Perhaps you can find a place where this has happened. You

remember that the soil in the Mississippi delta (Sec. 161) is very deep, because running water brought some of it from the Appalachian and Rocky Mountains. But in those places from which it came, the soil has become thin, sometimes leaving only bare rock.

224. The glaciers of New England.—To make things still worse for the farmer, the great glacier that once covered much of North America scraped the dirt off many a New England hilltop, and out

of the shallow valleys, and left bare rock. As the glacier pushed along, it mixed together the top soil and the rocks from beneath it, so that many fields are now so covered with big rocks that they cannot be made ready for the plow. In such a place, only trees and grass can wedge themselves in among the stones. Only here and there the farmers can make small fields that are good enough to plow. Thus New England has forests, rocky pastures, and small fields, while Iowa and Indiana have large fields of green corn and golden wheat.

225. New England farmers went west.—It was hard work for the early settlers of New England to make their living on such small, rough farms, and in a country where the winters are both long and cold. When the Erie Canal was built and railroads came, the people of New England could get about more easily and see other parts of the country. When they learned what good land there was in the North Central States, many of them left their New England farms, and with their families went to the better lands in the West. It was easier to grow food there, and they



Fig. 235. Cows at pasture on a rocky New England hill. The early settlers in New England cleared and farmed such rocky hillsides.

Photo. Doubleday Page Syndicate, N. Y.

could ship it back to the East by the Erie Canal and the railroads. Since no one else wanted to live in such rough places, many of the farmhouses of New England rotted, and the fields grew up with bushes and trees.

226. New England agriculture revives.—The good land in the West is now nearly all taken up, the price of food has risen, and the people are buying up the abandoned farms of New England. Sheep growers from the Plateau States find New England to be a good place for sheep. But still the farmers of New England are now so few that they cannot begin to raise enough food to feed the people of the many New England towns. Therefore they raise only those things that are hardest to bring in from other places. The first of these is milk, which will not keep. This is the chief farm product of New England. The farms are well suited to supplying it, for the cows can eat grass on land that is too rocky to plow, and there is enough rain to make grass grow well. (Fig. 88.) Bran (the outer layer of wheat), corn, and cottonseed meal, all good food for the cows,

are shipped to New England from other states.

Vegetable-growing near the cities is another kind of farming that suits New England, because truck is so bulky and hard to ship. Northeastern Maine, with its cool summer climate, grows many potatoes of such fine quality that they are sent to other states for seed.

Along the Connecticut River in Massachusetts and Connecticut, there is some level land where very fine tobacco is grown.

227. Climate.—New England's cool climate is one of the reasons why her people do so much manufacturing. It makes people feel like doing things. The New England summers are cool. The winters are very cold. The boys in school at Concord, New Hampshire, sometimes enjoy skating from the first of December until late in March; but, in order to do so, they have to keep scraping the snow off their pond all winter, for it may not melt from November until March. The students at Dartmouth College at Hanover, New Hampshire, have ski races and snow sports with students from Toronto and other Canadian Colleges.

The ice becomes so thick on New England lakes and rivers that large quantities of it are cut and stored for summer use. For many years sailing vessels carried

loads of New England ice to Washington, D. C., and to many other cities along the coast, which ice factories now supply.

228. New England Mountains and Lakes.—In New England the range of hills consisting of the Berkshire Hills and the Green Mountains, lying west of the Connecticut Valley, reaches through three

states,—Connecticut, Massachusetts and Vermont. Another highland to the east of the Connecticut Valley reaches from northern Connecticut through the White Mountains of New Hampshire on to Northern Maine. Mount Washington, in the White Mountains, is more than a mile high, and is the highest mountain east of the Rockies, except Mt. Mitchell in North Carolina. It is cool in these mountains when it is hot



Photo. Brown Bros., N. Y.

Fig. 236. An abandoned farm house in New Hampshire.

in New York and Boston.

Most of New England is in forest, and is dotted with many hundreds of beautiful lakes. The same glaciers that made New England fields so rough also turned some valleys into ponds and lakes, by pushing dirt into the streams and damming them, just as a boy can make little ponds by shoveling dirt into rills that run in the street, road, or field after a rain. The glaciers also made streams seek new courses and fall over cliffs or down steep hills. Thus New England has much good water power.



Courtesy of American Agr. Chemical Co., Boston

Fig. 237. A Vermont farmer plowing in a field fenced with stone from its own surface.

The highlands of New England are so rough and the summers so short that there is very little farming indeed. In many places in Maine and New Hampshire you can travel all day and see only trees, with never a house. Here in the summer are camping parties; in the autumn, hunters seeking deer and bears; and in the winter, lumbermen cutting logs. This is the lumber region, about which you have already read (Sec. 94). Here and there on the edges of this forest are towns where water power runs mill wheels, and where the people work in the sawmills and in the mills that make paper from the logs.

229. Tourists.—In the summer, thousands of people from the cities go to spend a few weeks at New England farm-houses; other thousands go into the forest to pass their vacations camping on the beautiful lakes and rivers, swimming, canoeing, sailing, fishing, and tramping. There

are more than five hundred boys' and girls' camps in New England. Other city people go to the hotels in the mountains, or to the sea coast, especially the coast of Maine, where the sea is forever beating the beautiful rocky shore with its waves.

On this shore, one has a chance to see another of Nature's ways of turning rocks into soil. The storm waves are so strong that they can knock men down or break up strong ships. Every time they strike the shore, they throw the stones on the beach against each other. This grinds them into clay and sand, which the ocean spreads along the beach or carries out to sea. By this means, the sea is eating into the land. It is grinding up rocky shores all over the world, and making sandy beaches where there were rocks. Some day, after many years, these sandy beaches may be elevated above the water and form a coastal plain.

230. Historical sights.—There is another reason why people visit New England. One can see there many things of which one reads in history. At New Haven, Connecticut, and at Cambridge, near Boston, are the Universities of Yale and Harvard. These great universities were



Courtesy of American Agr. Chemical Co., Boston

Fig. 238. A machine digging potatoes at Hingham, Mass.

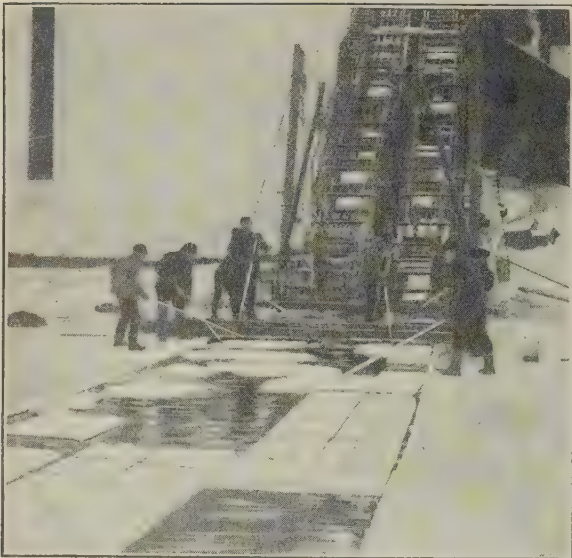


Photo. Brown Bros., N. Y.

Fig. 239. Harvesting ice on a river in Maine for shipment by boat to southern cities.

founded soon after the settling of New England, and from them have gone out the professors who founded dozens of colleges in many other states. Many of the famous writers of America have lived in New England, and the people there are very careful to keep, and mark, and show to visitors the houses and places where great things happened, or where famous people lived.

Among these sights are the rock at Plymouth on which the first settlers of New England stepped ashore; the battle-fields of Concord, Lexington, and Bunker Hill; and Faneuil Hall, in Boston, a public hall devoted to the right of free speech.

QUESTIONS

- 1. Compare the size of the New England group of states with your own state.
- 2. Why are many farms in New England abandoned?
- 3. Why is New England one of the greatest manufacturing regions?

- 4. List the chief manufactures. After each article, write the cities that make it.
- 5. Does your state send anything to New England? By water or by railroad?
- 6. List the books you use in school. Opposite each write the name of the city where the book was published. Arrange your heading like this:

TITLE OF BOOK.	WHERE PUBLISHED.

- 7. What advantages for trade with the West has New York over Boston?
- 8. Give one reason why New York City has grown larger than Boston.
- 9. Why does Boston receive most of the food and materials for manufacturing that are sent into New England?
- 10. Was your father's watch made at Waltham? Locate Waltham, Fall River, Providence, Lowell.
- 11. Select from the map the points of land in New England where there are probably light-houses. What kind of coast has New England? Ask your teacher to read you Longfellow's poem, "The Wreck of the Hesperus."
- 12. Why does the word *New* occur so often in the names of states and towns in the eastern part of the United States?
- 13. Where did these states and those of the Middle Atlantic group get their names?
- 14. What makes farming harder in New England than in the Central States?
- 15. What New England cities have many fishermen?
- 16. List the fish caught. How is the work done?
- 17. Why are there so many boys' and girls' camps in New Hampshire and Maine?



Courtesy of J. Horace McFarland Co.

Fig. 240. Portuguese workers harvesting cranberries, Cape Cod, Mass. Cranberries are also grown in New Jersey.



Photo. Brown Bros., N. Y.

Fig. 241. Tapping trees in a maple sugar grove. New Brunswick. The man on the right of the picture is boring a hole in the tree from which the sap will run.

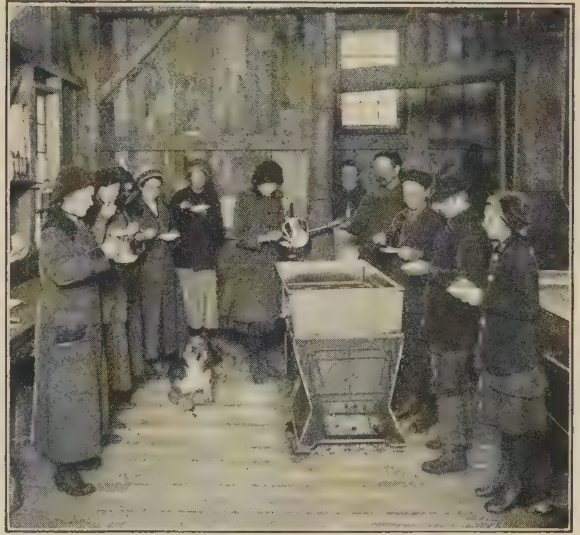


Photo. Brown Bros., N. Y.

Fig. 242. Sampling sugar in the sugar boiling house. Maple sugar is made by boiling the sap of the sugar maple tree. Who first made this kind of sugar?

GENERAL QUESTIONS

1. Name and bound each of the New England States. Give their capitals. 2. Draw a map, free hand, showing the boundaries of the states and the locations of the principal cities. 3. What group of states touches this group? (See map, Fig. 228.) 4. List the principal things that the people of these states have to send to other states. Also list the things they need but do not produce. 5. List the things that you get from these states.

THE NORTHERN COUNTRIES OF NORTH AMERICA

GENERAL VIEW

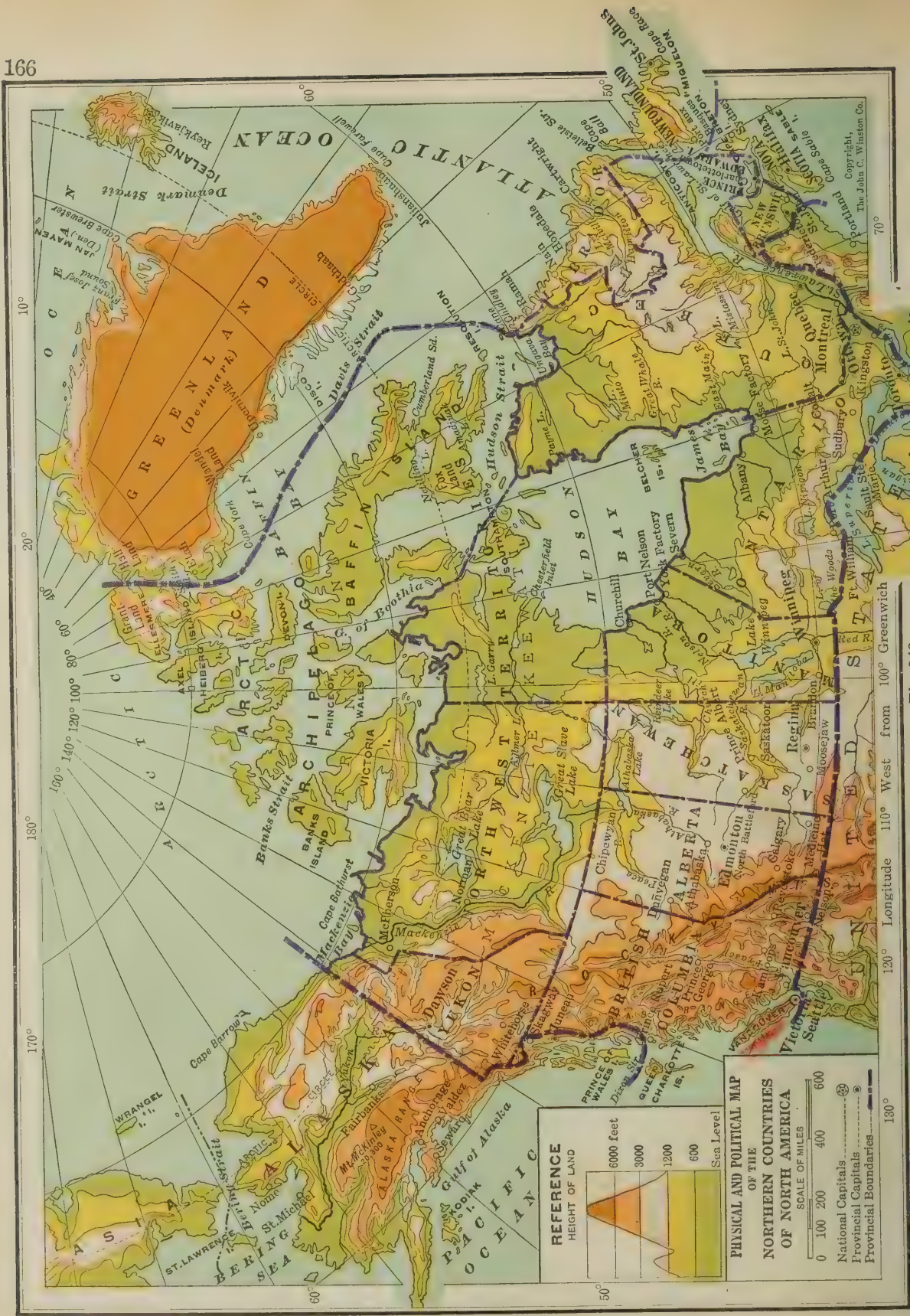
231. The great size of Canada.—To the north of the United States lies the Dominion of Canada. It is more than three thousand miles from the corner of Canada on the Atlantic Ocean, next to Maine, across to the other corner on the Pacific Ocean, by the State of Washington.

The Canadians have built a railroad from Halifax, on the Atlantic, to Vancouver, on Puget Sound. But they have built no railroad from their southern boundary to their northern boundary,

which is the Arctic Ocean. Why is this? You will learn the reason if you read again pages 1 to 11 that tell about the Eskimos and the Indians. Northern Canada is a part of the Eskimo country, and central Canada (Fig. 60) is the Indian country, where we find only a few white men at the trading posts buying furs.

232. Small population.—It is only in southern Canada that the white man has settled and made his home. In all Canada there are fewer people than in the state of New York, although Canada is larger than the whole United States. As the white man lives close to the railroads, the railroad map, Fig. 133, shows well where most of the white men live.

Parts of Canada are much like the parts of the United States that they touch. There are many places where a man would not know by looking at the country whether he was in Canada or in the United States. In Section 47 you learned about the boundary between the two countries. You remember that the level



wheat lands of Minnesota and Dakota (Sec. 78) extend into Manitoba and Saskatchewan. The wild, high Rocky Mountains become wilder, wider, and more rocky as we pass out of Montana and follow them northward into British Columbia. The rough forest country that we find south of Lakes Superior and Huron (Sec. 91) is found again to the north of these lakes. The rough and rocky country that makes up New England also extends into Quebec and New Brunswick. In all the eastern half of Canada, it is only in the St. Lawrence Valley that any large section of farming country can be found. Now you see that there are several good reasons why Canada, with her great size, has so few people.

Eastern Canada is like New England in having many waterfalls, which the people use to drive their mills. Thus the cities and towns of the eastern provinces have many factories, though not nearly so many as New England. The greatest of Canadian manufactures are lumber and paper made of wood, for forests cover much of the territory. Between Lake Superior or Lake Huron and the coast of Hudson Bay or Labrador, a man might walk for days and weeks and see little but the silent evergreen forest, with the lakes, swamps, and streams of clear cold water.

233. Farm life.—Most of the people in Canada are farmers. Scott McDonald is a farmer's son, and where he lives, in New Brunswick, east of Maine, snow lies on the ground nearly half the year—that is, from November until March. The children at Scott's school have plenty of winter sports, coasting, skating, and skiing all winter long.

While he is going to school during the fall and winter, Scott makes some extra

money by trapping. In a single season he often catches twenty-five muskrats along the stream that runs through his father's farm. Sometimes he finds a skunk or even a mink in his trap. Then he is indeed lucky, for their pelts, or skins, are worth several dollars each.

234. The maple sugar crop.—For three weeks in March, Scott is very busy doing something besides trapping or going to school. All day long and sometimes at night, too, he helps with the maple sugar harvest, in his father's sugar maple grove. The Indian taught the white man how to make maple sugar out of the sap of the sugar maple tree. Before the snow is gone in the early spring, sap begins to pass from the roots to the top of the tree. When the sap begins to run, Scott bores holes in the trunks of the trees. He sticks little pipes into the holes, and the sap runs out through the pipes into buckets. Then along comes his father with a tank on a sled, drawn by a horse. At each tree he empties the bucket of sap into the tank. When the tank is full, away he goes with it to the sugar house.

There the sap is boiled in a kettle or pan over a wood fire, until most of the water has gone off as steam, and only a thick, sweet sirup is left. Sometimes this is sent to market as sirup; sometimes it is boiled a little more, until it hardens as cakes of sugar. These are frequently used as candy. In rough fields and woods where the land cannot be plowed, many sugar maple trees can grow. The province of New Brunswick has much land of this sort, as have our northeastern states and the southeastern part of Canada. Without their sugar money, many farmers would have to go out of business. It takes more work to make sugar from the maple of

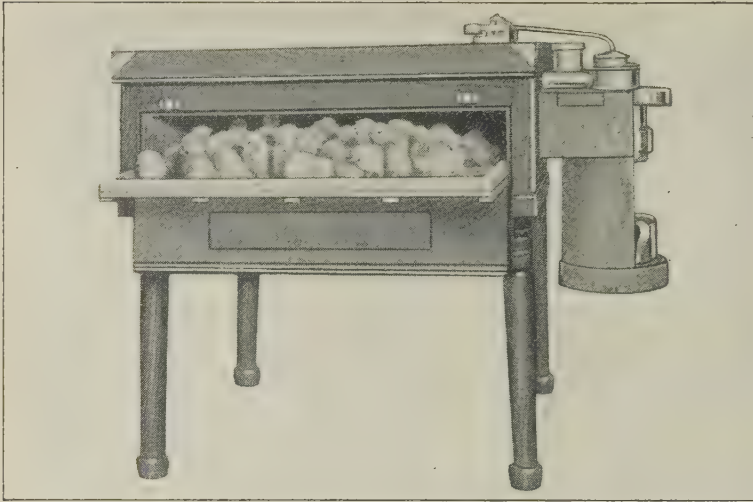


Fig. 244. Newly hatched chicks in an incubator. Ontario.

Photo. U. S. Dept. Agr.

Canada and New England than it does to make it from the cane of Cuba and the Philippines, or the beet of Utah; but the tree sugar tastes better and sells for a higher price.

235. Abandoned farms.—There are abandoned farms in eastern Canada, just as there are in New England, and for just the same reasons. (Re-read Sec. 224.) Many farmers from the eastern provinces have gone to the western provinces of Manitoba, Saskatchewan, and Alberta, because there one can get a farm for nothing. The Canadian Government still gives away farms that are half a mile square and contain 160 acres. They are given to any men who will live on them, cultivate them, and grow up with the country.

236. Free land.—Scott's Uncle Andrew took one of these free farms in Saskatchewan. It is in the midst of a great level plain. There is nothing but flatness and grass as far as one can see. You could walk for days and never see a hill. This treeless, level country of western Canada reaches from Winnipeg to the Rockies, and from Montana to Edmonton. Is your

state as long as this, and as wide? This is the Canadian wheat country which we read about before (Sec. 78.) White men have not lived very long in western Canada, and new railroads are still being built, so that people can go there and make farms. Since settlers had taken up all the land near the railroads, Mr. McDonald had to take a farm thirty miles to the north of the station. Therefore, he did not build a very large house or barn. He had to

haul his lumber thirty miles from the railway, and his wheat thirty miles back to the station. Hauling takes so much time that no one wants to raise wheat any farther than thirty miles from the station; so there were only cattle ranches to the north of McDonald's house until another railroad came through ten miles to the north of it. After that every train brought new settlers, and their frame shanties and sod houses could be seen springing up in every direction. So many people went there to live that in a few years big grain elevators had to be built at stations on the railroad, to take care of the thousands of bushels of wheat, oats, and flaxseed which are hauled to the station each season. What becomes of this grain? (Sec. 78.)

237. The dairy industry.—Scott's cousin, Alfred, lives on a farm in the St. Lawrence Valley, near Montreal. His father does not want to go to the West Canada wheat country. He would rather live where the wind does not blow so hard, where he knows his neighbors, and where there are good schools. He likes his Ontario farm, though it is rougher and

smaller than the farms that are being given away on the cold western plain. To make a living here, Alfred's father keeps cows. Cows give milk, which brings much money; but keeping cows for milk makes a great deal of work. Every morning before going to school, and every evening, Alfred helps with the milking. All the farmers in that neighborhood keep cows, and every day their milk wagons meet at a creamery owned by all the farmers together (a coöperative creamery). Thus all do what each could not do alone.

At the creamery there is a little machine, called a separator, which whirls the milk around, running the cream off into one can and the skimmed milk into another. (Fig. 246.) Then the cream is put into a big churn or tub, which dashes it around until lumps of butter form in it. Some of the milk is made into cheese.

Canada has several thousand of these creameries and cheese factories. The butter and cheese are wrapped in neat packages and sent down to Montreal, to Halifax in Nova Scotia, or to Portland, Maine. Then they are loaded into steamships and carried to England. The English people are very fond of bread and butter and cheese, and import cheese and butter, as well as wheat to make their bread.

Some of the farmers in West Canada who once produced only wheat and oats are now also keeping cows. They too have coöperative creameries, and send butter to England. This industry gives the wheat farmer something to do in the winter season, when the ground is frozen.



@ Asahel Curtis

Fig. 245. Indians pulling strips of blubber from a whale. British Columbia. What does this blubber do for the whale? Do you recall how Shoo-e-ging-wa and her people used the whale?

238. Dairy industry suits distant places.

—A few pounds of butter or cheese bring more money than many pounds of grain and hay. That makes it easy for a farmer who lives a great way from the market to sell butter rather than grain. For this reason the dairy industry often grows up in places that are a long, long way from the market. For many years before the World War the people of England got butter from Siberia, Australia, and New Zealand.

239. Trade and trade routes.—The people of Canada have had to work hard to get the butter trade. Their government sent men to England to find out just what kind of cheese and butter the people of England wanted. After these travelers returned to Canada, dairy schools were set up to teach people how to make good butter and cheese. After that, if the food was good and honestly packed, the government inspector put his stamp on the packages. This stamp is really a message to the buyer, which says: "This is a good article—you may depend upon it." In this way the buyer in England knows what he is getting, and Canadian products sell well.

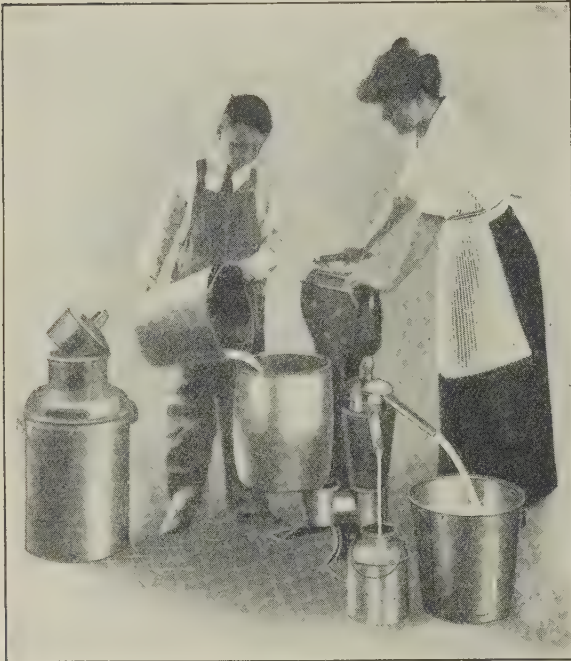


Fig. 246. A cream separator, a machine that instantly separates the milk from the cream.

In the winter time much Canadian produce is shipped from Boston and from Portland, Maine, because the St. Lawrence River freezes over, and steamers cannot then go up to Quebec and Montreal as they do in the summer. But in the summer time much American produce goes down the great river St. Lawrence through the ports of Montreal and Quebec. That is the way neighboring peoples should work together. So long as the Canadians and the Americans treat each other fairly, they will keep on living at peace with each other. Much of Canada's trade is with its nearest neighbor, the United States. It is carried by many railroads, as well as by steamers on the Atlantic, the Pacific, and the Great Lakes. Most of the wheat of west Canada goes down the Great Lakes and is sent to England.

240. Fisheries.—You remember that many salmon are caught and canned on the Pacific Coast. (Sec. 137.) On the

Atlantic Coast, many codfishing boats sail from Halifax and Yarmouth, just as they do from Gloucester, Massachusetts, or St. John's, Newfoundland. (Sec. 216.)

241. Government and cities.—Canada is called a dominion of the British Empire. A governor is sent out from England to Ottawa, the capital, but the Canadians really govern themselves by their own parliament and ministers. They have nine provinces, very much like our states, and two territories. One of these territories, Yukon, joins our territory of Alaska, and, like it, has some gold mines but very few people. Canada's three leading seaports are Halifax, St. John's, and Vancouver. Montreal and Quebec are summer ports and both are fine cities. In Quebec most of the people still speak French. (Sec. 48.) Winnipeg is the wheat market of western Canada.

242. Newfoundland and Labrador.—Newfoundland and Labrador are a part of British America. We read about the people of these lands in our story about the codfishermen. Most of their food comes from Canada, but Canada has no more to do with their government than we

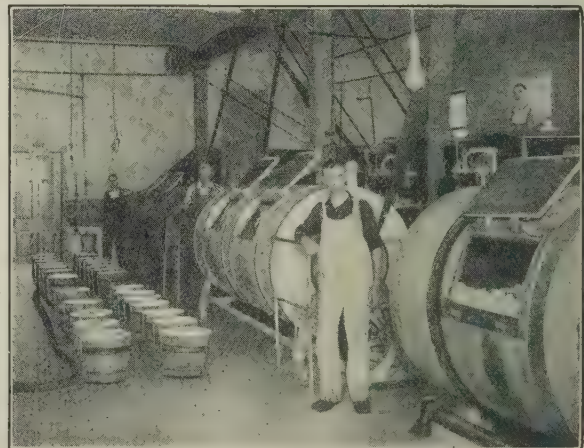


Photo. U. S. Dept. Agr.

Fig. 247. Churns and butter firkins in an Ontario creamery.

have. They have a governor of their own, sent out from England. Newfoundland is about as large as Maine and New Hampshire put together; but even with Labrador thrown in, the province has no more people than the city of Providence, Rhode Island. You remember that (Sec. 12) the climate is too cold for farming. Therefore the people sell fish, fish, fish, as well as paper made of wood pulp, and iron ore that they dig on a small island close to St. John's, the capital.

243. Danish America.—Greenland and Iceland are two islands northeast of North America. Both were ruled by Denmark for centuries, but Iceland is now independent. We learned of Greenland when we were studying about the Eskimo. Iceland is very different from Greenland. Warm ocean currents from the south flow along the shore of Iceland, but do not touch Greenland. Therefore Iceland is warmer than Greenland. There is enough grass to allow the people to keep

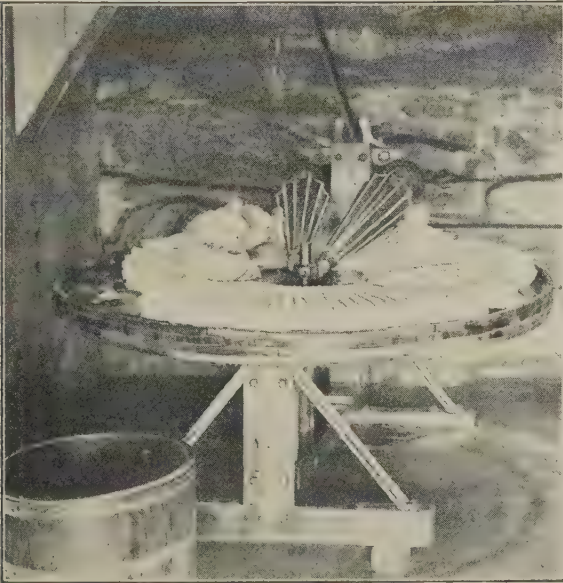


Photo. Brown Bros., N. Y.

Fig. 248. A machine that works the salt into the butter. How many different kinds of fat foods can you name?

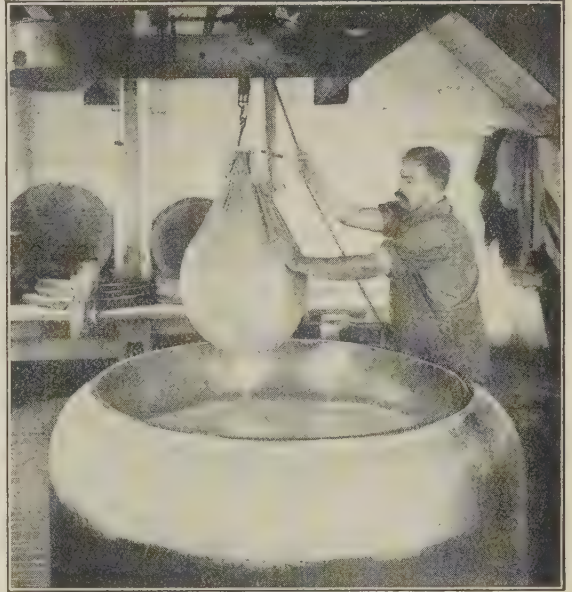


Photo. U. S. Dept. Agr.

Fig. 249. A sack of curds in a cheese factory. Quebec.

sheep and cows, so that the Icelanders get their living by selling cattle and wool, as well as fish. The people are very well educated, and read many books. One often sees Iceland girls and boys reading books as they ride their ponies to market, carrying two cans of milk, one on each side of the pony.

QUESTIONS

1. How did white people learn to make maple sugar? 2. Where in the United States and Canada is the most maple sugar made? 3. Why was this part of Canada settled first? What caused many settlers to move west from that region? 4. Give three reasons for the smallness of Canada's population. 5. Why are Greenland and Iceland called Danish America? In which country would you rather live? Why? 6. How many degrees is Winnipeg north of the equator? Is it north or south of London? 7. Where in South America does the fiftieth parallel pass? Are there countries as far south of the equator as Winnipeg is north? What differences are there between the northern part of North America and the southern part of South America?

8. What crops and animals are raised in Manitoba, Saskatchewan, and Alberta? 9. What part of Canada is a dairying country? Why? Where is most of the butter and cheese sent?

Trace the route. 10. What two languages are spoken to-day in Quebec? 11. What bodies of water are owned by both Canada and the United States? Locate. 12. What two great outlets to England are open in summer? Trace the winter outlets. Why are they different?

13. Locate Newfoundland and Labrador. Why do they contain so few people? Name their products. 14. What meridian (nearly) forms part of the boundary between Canada and Alaska? Why is it possible to plow with a big tractor in Manitoba? Why is it impossible in parts of New England? 15. What large region of Canada is divided into provisional districts? What people live in this region? What product do they sell to the dairy and wheat farmers?

OUR ISLAND POSSESSIONS

THE COCONUT GROWER

(PHILIPPINE ISLANDS)

244. Work in the coconut grove.—Thump-thump-thump, thump! It was the sound of coconuts, big and heavy, falling from the palm trees. All night they fell, as the storm wind blew. Emilio was glad he was not out there under his trees, for a falling coconut sometimes kills a man.

Emilio lives on the island of Luzon, one of the Philippine Islands, in the western part of the Pacific Ocean near Asia. (See Figs. 40 and 251.) He is a Malay, a brown man. His hair is straight and black. He speaks a little Spanish and he has a Spanish name, because the Spanish

people once ruled his island. For a month before the storm, Emilio had done nothing but swim, fish, paddle about in his canoe, and swing in a hammock. Maria, his wife, had been keeping the weeds away from their twenty banana plants, and from the sweet potatoes, peppers, and climbing beans that grew in their little garden. She also kept tight the stick fence around the garden, so that the pigs couldn't get in and root up the potatoes. The pigs had to hunt in the woods to get their meals of roots, worms, and nuts. Maria fed them just enough to keep them in the habit of coming back home, else they would have become wild pigs of the forest.

The morning after the storm, Emilio and Maria called the boys, Juan and Garcia, aged fifteen and thirteen, and their sister Isabel, and the family went to work pick-

ing up coconuts. Some of the coconuts had lain in the grass for a month, ever since the last storm; but they were still good; coconuts have thick husks and hard shells that protect the inside of the fruit. Work began at dawn and stopped at eight o'clock in the morning, for it is hot in the Philippine Islands.

Then came a big breakfast of fish and sweet potatoes; afterwards everybody took a long nap. At four o'clock, after a lunch of bananas,



Fig. 250. A coconut tree and some dugout boats.

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Fig. 252. Hauling coconuts to the shed. The water buffalo is the Filipino's ox. Is the coconut as easy to grow as peanuts? How many kinds of nuts have you gathered from trees?

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they went to work again. By dusk there were two thousand coconuts in a pile by a shed in the middle of the grove.

The next day the coconuts were husked and split open with a long, sharp, heavy knife, and the meat was pulled out—two pieces from each nut. These pieces Isabel spread out on wooden trays in the hot sun to dry. In the evening the trays were carried into the shed to keep the dew from the nuts. Each morning they were put out in the sun again. One day it rained suddenly, and there was a great scramble to get the coconut meats into the shed so that they would not get wet. At the end of a week they were dry, and ready to sell under the trade name of copra.

245. Going to market.—Then one day Emilio and Juan pushed a wooden canoe out of the bushes on the bank of the creek, put into it two hundred pounds of copra, and paddled down stream. In two hours they reached the mouth of the creek, which

flowed into a safe little bay. Into this little bay, sea-going boats can easily come. Once a month there comes to this bay a little steamboat, on its way from Manila to Iloilo. It anchors near the mouth of the creek, and all day long row-boats and canoes are busily carrying things back and forth between the steamer and the little town upon the shore. Boxes, bundles, and sacks go ashore to the stores of the Chinese merchants, who do all the trading in the town. Some of these boxes, bundles, and sacks come from England and France, some come from India and Japan, many of

them come from the United States. If we could open those packages and read the names on the boxes and cans, we should see many American names that we know—names of southern cities that make cotton cloth, and of New England cities that make knives, needles, and thread.

Canoes carry to the steamer many sacks of copra, and also bundles of manila hemp. This hemp is a long, strong fiber that is made into the best of rope at factories in Chicago, Philadelphia, and Boston.

One of Emilio's neighbors, Romulo, grows hemp to sell. He takes the long, pithy stalks of a plant that looks like the banana plant, and scrapes them with a knife. He takes off the soft pith and skin, and leaves the hard, strong fibers. (Fig. 264.)

In addition to the copra and hemp which were to go by the steamer to Manila, were a few bundles of tobacco and four fat water buffaloes for the meat market. These big animals are the Philippine cattle.

They are fond of staying in the water to keep cool. To get them on board the boat the men first made them swim out to the steamer. Then a rope was put around the horns of each buffalo, and a little engine hoisted him up, scared and kicking, on to the boat.

Emilio sold his copra to one of the Chinese storekeepers. The boys spent a pleasant afternoon watching the work around the steamer. In the evening they took home with them a hundred-pound sack of rice. Then they all had a feast, for they had had no rice for three weeks. They never eat bread, but use rice, sweet potatoes, and bananas instead.

Each day for three days more they took down a boat load of copra. All together they sold fifty dollars worth, and no one in that family had to work any more for two months.

246. Trading with all the world.—With the fifty dollars, Emilio bought some rice from French Indo-China (See Fig. 444); a red cotton dress from England for Maria; two pretty combs from France; some glass beads from Venice, Italy (Fig. 315); a new coconut knife and a hatchet from Connecticut; a cheap clock from Massachusetts; some white cotton cloth from South Carolina; some canned meat from Chicago; and some canned peaches from California. Of course, all these things came from the Chinese store in the town beside the bay. The Chinaman got them from the American wholesale store in Manila, and the wholesale store in Manila got them from export stores in San Francisco, Seattle, New York, and London. Can you show the routes that the steamers took as they carried these goods to Manila?

One of Emilio's packages was wrapped up in tough, brown paper, called manila



© Publishers' Photo Service

Fig. 253. Taking the meats out of coconut shells after the outer husks have been removed. What will be done with the coconut meats?

paper. This paper was made from an old manila hemp rope that had been worn out on a Gloucester fishing schooner. It had then been made into strong paper at Holyoke, Massachusetts, beside the waterfalls of the Connecticut River.

247. Our uses of coconut.—Some of Emilio's copra was crushed by heavy machines at a Manila oil mill, to get out all the oil in which the meat of the coconut is so rich. Coconut oil is good to eat, and twenty pounds of copra make a gallon of it. Some of the Philippine copra finds its way into oil mills in Marseille, France, some to New Orleans, and some to Amsterdam in Holland. Some even goes to Hamburg, Germany, and on up the river to Prague (Fig. 315), the capital of the new country called Czechoslovakia. From the oil mills coconut oil goes in barrels to factories in Milwaukee, Chicago, London, Paris, Berlin (Can you find them on the maps?), and to many other cities in Europe and America where cooking-fat is prepared for kitchen use.

A few years ago a chemist learned how to mix coconut oil with milk and other things, so that the mixture tastes like butter made

from cow's milk. It is so much cheaper than real butter that the people in England, Germany, and other countries of Europe eat as much of it as they do of cows' butter. We are also using much of this palm-tree butter in the United States, and therefore the price of coconuts has risen as the price of meat has risen.

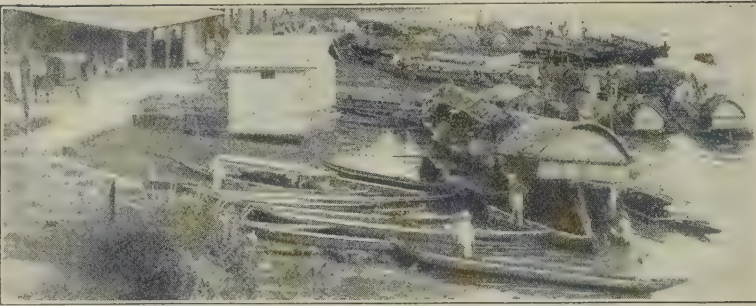


Fig. 254. Dugouts and houseboats on the bank of a Philippine river.

We go ashore. The people in the streets are speaking a language we do not understand. It is Spanish, for the island was settled by the

Spanish soon after Columbus discovered America. But when we see the American flag flying from the buildings, we know the island is American territory.

We go into the country. Most of the trees along the road are strange to us, but some of them are palms like those we found in Florida, which grow only in a land where there is little or no frost. As we enter a village, we see a small boy come out of a little shop sucking one end of a long green and purple stick as thick as a man's thumb. It is a queer kind of candy—a piece of sugar cane stalk, which he sucks to get the sweet juice.

QUESTIONS

1. Imagine you are a Filipino. Describe a day's work helping your father.
2. What trees and plants grow around Emilio's home that do not grow around yours?
3. What things that are necessary to you would Emilio never think of using?
4. On the globe or world map trace the route from Seattle to Manila; from New York to Manila. Give the latitude and longitude of each of the cities.

5. Ask your grocer to help you find the things in his store that are made of coconut, or contain coconut oil.
6. Trace a barrel of oil from the mill in Manila to a Chicago or Milwaukee factory. Trace it to London, England, or Paris, France. How do people use it?

7. Why does the Eskimo have to work harder to live than Emilio?
8. How many degrees is Manila north of the equator? How near the equator have you ever been? Where was it?

THE SUGAR ISLANDS

(PORTO RICO, HAWAIIAN ISLANDS, AND THE PHILIPPINES)

248. The sugar ship.—Let us go aboard a ship at New York and sail away to the southward. In about four days we see land, and sail into the harbor of the city of San Juan, in the island of Porto Rico.



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Fig. 255. Lunch time in a sugar-cane field on the island of St. Kitts, British West Indies. Cane stalks make good candy.

249. The sugar plantation.—At one edge of the village is a huge sugar mill with a high smokestack. All around are fields of sugar cane. Sugar cane looks something like corn without any ears, and it grows nearly twice as high as a man's head.

Tractors and plows from the factories in the United States are often used to prepare the Porto Rican cane fields for planting. Instead of planting seed, the cane grower plants pieces of sugar cane stalk about a foot long. After these sprout, everyone is busy keeping the weeds from getting ahead of the canes while they are little. Growing sugar cane is much like growing cotton. (Sec. 157.) Like cotton, the cane plant requires warm weather and plenty of rain.

In about a year, the stalks are tall, full of sweet juice, and ready to harvest. Men cut down the big stalks, and send them to the sugar factory or mill. Sometimes the cane goes to the mill in ox carts, sometimes in little railroad cars pulled by a locomotive about as large as a very small automobile. The locomotive and railroad cars run on a track that is laid down in the fields, and afterwards taken up and moved to another place where it is needed for hauling another part of the same crop.

250. The sugar mill and the sugar ship.—In the sugar mill the juice is squeezed out of the cane between heavy rollers. The juice is then boiled and boiled until it gets so thick that most of

the sugar settles to the bottom of the big kettles. The sweet juice that remains is molasses.

The sugar that settles in the bottom of the kettles is brown sugar. It is dried, put in sacks, and sent up to San Juan,

where we see it being loaded into our steamer, when we return from the country. All day long, sack after sack passes over the ship's side in an endless stream. The next day and the next the loading keeps on. Will it never end? It would take sixty Porto Ricos to make a Texas, but this one little island, about half as large as New Jersey or Massachusetts sends to the United States every day in the year enough sugar to fill about seventy freight cars.

At the end of a week our ship is full of sacks of sugar, six thousand tons of it. The sailors fasten up the hatches (holes in the deck, see Fig. 207) and we sail northward. On the morning of the sixth day, we wake to find the ship lying still. We are outside the port of New York, waiting for the pilot to take us into the harbor.

251. Getting into the harbor.—Around every port there are men called pilots, whose business it is to sail out in small boats, meet incoming steamers, and steer them safely into the harbor. On the map (Fig. 211) New York Bay looks big enough for any ship to sail into, but men have had to dig narrow channels to make it deep enough for big vessels to enter, and a pilot must know the channels



Courtesy of Tampa Board of Trade,
Tampa, Fla.

Fig. 256. Sugar cane with leaves stripped, ready to cut.



Courtesy of Phila. Commercial Museum

Fig. 257. Oxen hauling cane to a Cuban sugar mill. What trouble may heavy rains and soft earth make?

well before he tries to take a ship in, or he may run aground. Great dredges, used to deepen channels, are at work most of the time in the harbors of New York, Philadelphia, London, and many other cities.

The pilot comes aboard our sugar ship at five o'clock in the morning. He steers the ship, and three hours later it is tied up beside a big sugar factory (refinery) in Brooklyn. The hatches are opened, and a hundred men swarm over the ship, moving sacks of sugar into the big tall building. Brown sugar, coarse-ground but sweet, goes into the refinery. It comes out as white sugar, granulated, powdered, or in lumps. At the back of the refinery, freight cars are loaded with barrels and sacks of sugar for shipment to many towns in New England and the Middle Atlantic States. On the water side of the refinery, a barge is loaded with sacks of refined sugar. To what cities might it go?

252. The sugar trade.—Nearly everybody likes sugar. We grow a lot of it in the United States (Secs. 127 and 172), but we also import so much of it that we spend more for our imported sugar than for any

other of our imports. There is a great trade in sugar, for many countries grow it, and many countries import it. (Fig. 259.) It used to be very scarce and costly, but new inventions,—steam mills, steamboats, and trains,—have made it so cheap that schoolboys have more of it now than kings did when Columbus crossed the ocean. Before the World War it cost only two cents per pound to grow sugar in Cuba.

The greatest sugar exporter in the world is the island of Cuba. That island is ten times as big as Porto Rico, and has level plains and rich soil. Cuba is independent, with a president of its own. Many American sugar companies have large plantations there, with big mills and many Spanish and negro workers. After the sugar harvest, a whole fleet of steamers sails away with sugar for New Orleans, Baltimore, Philadelphia, New York, and Boston, and some even for Europe.

Another sugar-growing region is far away from Cuba and the United States. Out in the Pacific Ocean there are two groups of islands, Hawaii and the Philippines, which belong to the United States. Both send unrefined sugar to San Francisco where it is refined. The Hawaiian Islands offer one of the finest places in the world to grow sugar cane, because the soil is so very rich. How does this happen? Because these islands were made by volcanoes.

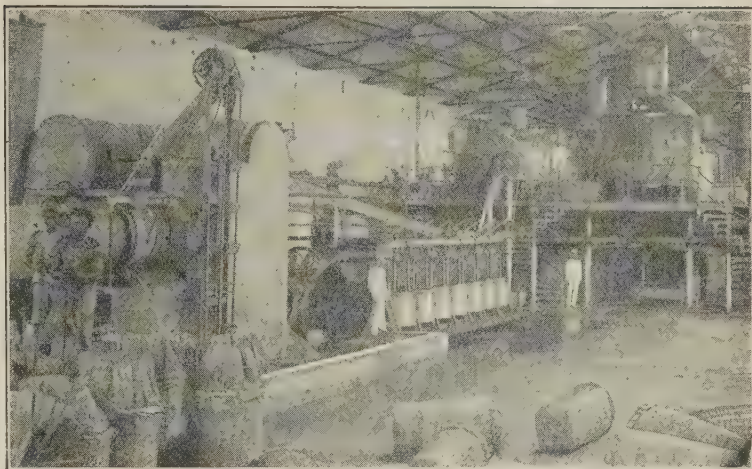
253. The volcanic islands.—A volcano is a place where melted rock, called lava, rises through a break in the earth's crust and runs out on the ground, as water would from a leaking pipe under the ground. The hot lava soon cools, and piles up around the hole from which it flows, finally making a mountain. (See Fig. 266.)

The Hawaiian Islands were built up from the bottom of the sea by the lava from

the volcanoes now to be seen on these islands. The largest of these volcanoes, Mauna Loa, has an opening or crater big enough to hold a city. Melted, white hot lava boils and splashes around in the crater. At night it lights up the sky brilliantly. Every few years it overflows, and the stream of lava runs slowly down the mountain side, covering fields, burning forests, and sometimes even running into the sea, where it makes a terrible boiling and makes the island larger after it has cooled.

After many years, the lava decays, and forms the richest of soil, on which splendid crops of cane are grown. Many American companies have sugar plantations on this lava soil, and hire Hawaiians, Japanese, Chinese, and Portuguese people to work in the fields. Volcanoes have made rich soil in many other parts of the world.

Often when a volcano is active, there are great explosions which blow up the lava into such clouds of dust that it covers the country like snow for miles and miles around. How does this happen? Sometimes there is water mixed with the lava, down deep in the ground. The heat of the lava turns the water to steam, just as the water in an engine boiler is turned to steam, and as the steam gets near the surface of the ground, it blows up as engine boilers sometimes do. In this way the lava is blown into fine pieces and sent up into the air. The big pieces of lava fall close to the opening, or crater, and help build up the mountain. The fine pieces form great clouds which look like clouds of smoke, but finally fall as



Courtesy of Phila. Commercial Museum

Fig. 258. A sugar factory in Java. Each rattan basket holds 600 pounds of raw cane sugar. Does it take this much machinery to make maple sugar?

dust. Sometimes, after this dust falls, it is called ashes, because it looks like ashes. The explosions can sometimes be heard at a distance of a hundred miles or more.

254. Sugar from the East Indies.—A long way west of Hawaii, on across the Pacific Ocean (Fig. 40) near Asia, are the Philippines, the second group of Pacific islands belonging to the United States which send sugar to us. It was here that we saw Emilio, the coconut grower. The people there speak Spanish, because these islands belonged to Spain for three hundred years. The people are almost all Malays, brown in color. They first learned Spanish from their rulers, but now, in their schools, they are learning English from American teachers. For a long time sugar has been one of the chief exports of these islands.

Java, one of the Dutch East Indies, is another island famous for its sugar cane growing. This island is south of the Philippines (Fig. 40) and, like them, and like Hawaii, has volcanic soil. That small island has more people on it than all of the United States west of the Mississippi

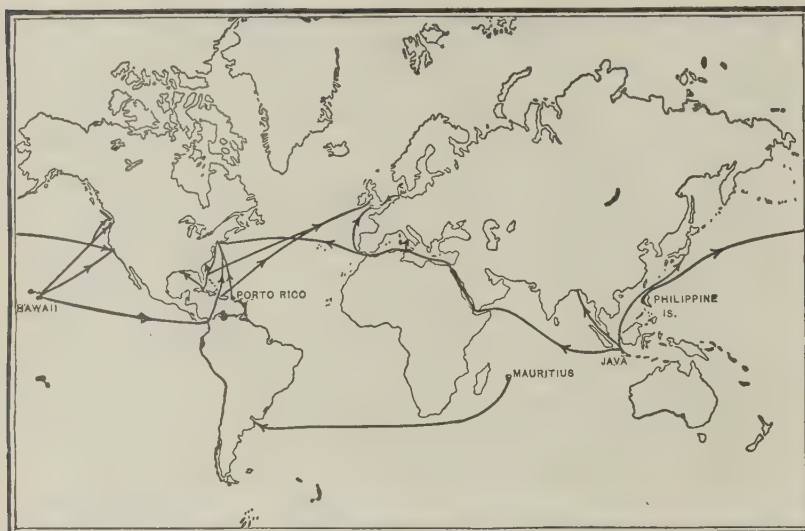


Fig. 259. Map to show the world trade routes of cane sugar. The arrows point the direction of movement. In what zone does sugar cane grow? In what zone do sugar beets grow?

River. The people live in villages, in houses made of bamboo and palm leaves or of grass. They have fine fields of sugar, rice, and beans. The people of Java are Malays, but the people of Holland rule them and own the sugar mills and many of the ships that carry the sugar. The sugar that they produce is shipped to us in big cases of palm-leaf basketwork, holding six hundred pounds each. (Fig. 258.)

Sugar cane is grown in many other places in the warm parts of the world where there is plenty of rain but most of it comes from these five moist islands that we have just talked about.

255. Sugar cane in the United States.—You remember that sugar cane is also grown in the rich delta soils of southern Louisiana, but it costs more to grow it there than it does in the warmer countries. Louisiana has frost every winter, and the canes do not have such a long season in which to grow. It must also be planted oftener than in the warmer lands, where it lives for many years without replanting.

QUESTIONS

1. Describe the loading of a sugar ship at San Juan, Porto Rico. Trace it to New York. What did the pilot do in the harbor? How was the sugar unloaded at a refinery?
2. What large island near Porto Rico is the greatest cane sugar exporter in the world? Why?
3. Cuba is independent. Name and locate its capital. Why do many ships from the United States go there every winter?
4. Name two groups of islands in the Pacific which belong to the United States, that export cane sugar. Trace the ship route to San Francisco. Measure the distance.
5. What part of the corn plant is planted? Of the cane plant?
6. How is cane like corn? Has it a more or a less jointed stem?
7. How many times as tall as the man (Fig. 256) is the cane stalk?
8. Which are the sugar ports of the eastern United States? (Sec. 252.) On what body of water is each?
9. Why is it that sugar refineries are often built at seaports? What city on the Pacific Coast receives and refines Hawaiian sugar?
10. Which islands, the Hawaiian or the Philippines, are farther from the equator?
11. Spell and use in sentences the following: Hawaii, Philippines, lava, volcanoes, coconut, molasses.
12. Where is Java? Who owns it? Compare its size, length, and latitude with those of Cuba.
13. In what direction is the Panama Canal from San Juan? New Orleans from Havana?
14. What sea is south of Cuba and Porto Rico? Notice what islands enclose it and what continent is to the south of it.
15. What groups of islands does a ship pass going from New York to Porto Rico? Which islands are nearer Porto Rico?

GENERAL VIEW OF THE ISLAND POSSESSIONS OF THE UNITED STATES

256. Green tropic isles.—If we should set out to visit all the islands belonging to the United States, we should have to go sailing about for rather a long time. We should have to go in many directions, too, because the islands are scattered about the

world. Most of them are in the hot regions where there is no frost, but where there is enough rain to make trees grow and stay green all the time. Besides oranges, bananas, and pineapples on the islands, there are many fruits strange to us. There are also coconuts, sugar cane, and chocolate.

257. Porto Rico.—Of our island possessions the one nearest to us is Porto Rico, in the West Indies. Porto Rico is near enough to send early vegetables to New York in the winter season. She also exports sugar, some coffee, and tobacco. In return for these things, we send to the stores of Porto Rico clothes, flour and other food, tools, and many other things.

A railroad goes nearly all the way around the island, and connects Ponce and San Juan, the chief towns. About two-fifths of the people are negroes. The others are white, chiefly of Spanish race. Most of the people are farmers, and there are many more people on this small island than there are in all Alaska.

Near Porto Rico, to the eastward, are three small islands, St. Thomas, St. John, and St. Croix. They are part of the group called the Virgin Islands. In 1916 the United States bought them from Denmark. Many passing vessels stop at St. Thomas to buy coal, which has been brought there from the United States.

258. Hawaii.—From San Juan, the capital of Porto Rico, it would take a steamer two weeks to sail through the Panama Canal and out into the Pacific Ocean to the beautiful harbor of Honolulu. Hawaii



Fig. 260. A Philippine straw house.

is two thousand miles southwest of California. The volcanoes have made the Hawaiian Islands very steep and rough, so that, though the soil is rich, only a part of the island can be cultivated. The islands are larger than Connecticut and Rhode Island.

Sailing from Hawaii to the westward, a steamer would come in about two weeks to a little island only thirty-two miles long. It is Guam. On it are only a few thousand brown men. But Guam is an important little island, because there our government has a naval station. A naval station is a place where coal and other supplies for the ships of our navy are kept. Often when ships cannot carry enough coal and supplies for the whole of a long journey, they stop to get more at Guam, for there our government keeps a huge pile of coal beside the harbor.

259. Guam and the telegraph stations.—On the shore at Guam a visitor would see several young white men walking around. They are telegraph operators from the ocean cable station. Guam is



Photo. Brown Bros., N. Y.

Fig. 261. An outrigger canoe and surfboard race in Hawaii.

one of the stops on the cable line that goes from San Francisco to Asia. An ocean cable is a bundle of telegraph wires, bound together in water-tight rubber and laid on the bottom of the sea. Over this line news is sent from one part of the world to another in just a very few minutes. It takes several men to operate one of these cable stations, for someone must be on duty every minute, night and day. There are many of these little groups of men stuck about the world on lonesome islands and barren shores, with no other people of their kind anywhere to be seen for weeks or months. They all help to pass on the news that we read in our papers.

On the shore of this little island of Guam are the tall towers of a wireless station. It sends messages through the air to the captains of ships at sea. Regularly it sends air messages to Japan and Hawaii. From the naval station at Hawaii the messages are sent on to the station at San Francisco (Mare Island), and then on to Washington, Newfoundland, Ireland, Norway, Germany, and Russia.

260. The Philippines.—To the westward, five or six days by steamer from Guam, the green forests of Luzon come in sight. (Sec.

249.) One more day of sailing would bring the traveler to Manila, the capital of the Philippine Islands. It is in the Philippine Islands that Emilio, the coconut grower, and his neighbor, the hemp grower, live. (Secs. 244 and 245.) Thick forests and many bushes and climbing vines cover most of the land in these islands. Back in the forests are many black men, who live in little hidden villages

of grass huts, and have little to do with the brown men or the white men. To get things to eat, they hunt with bows and arrows, spear fish, and gather wild fruits and nuts in the forest. Some of them have no gardens or crops. Some of these people are smaller than white men. We do not know how many of these wild men of

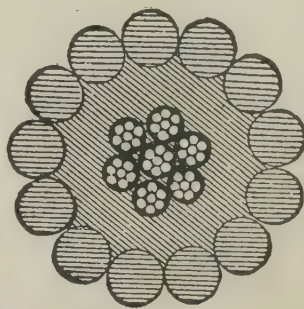


Fig. 262. View of the cut end of an ocean cable. The strong outer wires protect the inner ones which carry the messages. The space between contains waterproofing.

the forest there are, but the American governor of the Philippines thinks that there are as many of them as there are people in the state of Maine.

Most of the Filipinos live in the lowlands as Emilio does, and raise copra and hemp. Others work on sugar plantations, and in the oil mills and tobacco factories of Manila and other towns. There are schools and colleges in Manila and some of the other large towns, and some of the Filipinos come to American colleges to continue their education. Altogether, the Philippine Islands have as

many people as New England, and are twice as large.

261. Samoa.—To go from Manila to Samoa, the southernmost of our island possessions, would take nearly a month of sailing. The Samoan Islands are in the South Pacific. They, too, are small like Guam. They are of little value except as naval stations, where ships can get coal and repairs. The native brown people are very much like those of our other Pacific islands.

QUESTIONS

1. How many states are in our United States? How are they represented on our flag? 2. What other land do we own on the continent of North America? 3. Make out the following chart using your text-book and maps:

OUR ISLAND POSSESSIONS.

ISLANDS.	OCEAN.	NEAREST CONTINENT.

4. Our government has ships called colliers especially built for carrying coal. After studying this chapter, write a short paragraph on the work of these colliers among our island possessions.



Fig. 263. A ball of binder twine made from Manila hemp and ready for a binder in America. (One-fifth actual size.)

What did he mean by saying he lived the second door west from San Francisco? 6. Look in the newspaper for a bit of news cabled from far away. Bring it to class. Ask your teacher to appoint a committee to collect all these paragraphs and mount them neatly on a sheet of paper. Then name the waters across which these messages came.

7. Stroll through an imagined Philippine garden. Make a list of the fruits that you would

find in your language books or readers anything written by Robert Louis Stevenson. He lived in Samoa. Trace his journey from there to San Francisco and measure the distance.



Fig. 264. Stripping Manila hemp fibers from the long-leaf stalks.

find. Do any of them grow in the United States? 8. Do you think you would find some vegetables that we grow in the United States?

THE SOUTHERN COUNTRIES OF NORTH AMERICA

GENERAL VIEW

262. The sisal growers of Yucatan.—Enrique is an Indian boy. His skin is dark, almost black. The sun would burn your skin several shades darker, too, if you lived in Yucatan with Enrique, where the sun shines most of the time. There is but little rain, and no frost or winter. Enrique never had shoes on his feet until he was ten years old. Then he was given a pair as a reward for going by himself to get a jar of water. He never saw a stream or a spring or a water pipe. There are none of these things anywhere near his little village of one-storied, whitewashed houses built of sun-dried clay brick called *adobe*.

When the family needed water in the days before Enrique was big enough to help, his mother balanced a big earthen



Courtesy of Int. Har. Co.

Fig. 265. Cutting sisal leaves to make fiber, Yucatan. What fiber competes with this one?

water jug on her head with one hand and took a lighted candle in the other hand. Then she went down a long, crooked, dark passageway from the center of the village into a cave deep underground. Here she dipped up a jar of water and took it home. Since it took her fifteen minutes to make the trip, she was glad when Enrique could do it for her.

In Yucatan nearly everybody gets water by going down into these caves or underground passages. Do you wonder what makes these passages? This is the way it happens. Suppose that there was a thick layer of hard salt a few feet under the earth where you lived. When the rain soaked through the earth, it would dissolve the salt, carry it away to the springs, and leave holes under the ground where the salt had been.

This is almost what happens in the caves of Yucatan. Under the earth there is limestone. It, like salt, dissolves so easily that the water has made holes or caves in it and the rain water, after it

soaks into the ground, runs into them. The people then have to go down into Nature's wells to get water. There are caves like that in many parts of the world where there are limestone rocks. There is a very large one in Kentucky, called Mammoth Cave. Many people go to see it. You can ride in a boat on a stream that flows through Mammoth Cave. (See Fig. 173.)

In the Yucatan cave country, Enrique's father works in the sisal fields. Sisal is a coarse kind of plant that

grows in dry, hot countries. It has strong fibers in its long leaves. The yucca and century plant, which grow in parts of the United States, are small cousins of the sisal plant. There are factories in Yucatan in which the sisal fiber is taken from the leaves, after which ship loads of it go from Progreso to New Orleans, and New York. In America the fiber is made into the twine



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Fig. 266. City of Puebla, Mexico, near the snow-capped volcano, Popocatepetl, 17,884 feet high. See the Spanish cathedral and the flat-topped tropical houses.

with which reapers bind up the wheat on MacDonald's farm in Saskatchewan and on the wheat farms of Kansas, Dakota, and Indiana. Manila hemp from the Philippines is also used for binder twine.

During the World War, we feared that we would lose some of our wheat because ships could not be spared to bring manila hemp the long, long journey from Manila, and there was barely enough sisal in Yucatan to bind up our grain.

The people of Yucatan sell little else than sisal. The steamers from the United States, England, France, and Spain, stopping at Progreso, leave in exchange for sisal all the things you can find in any store.

263. Mexico, general view.—To discover the size of Mexico, we must look at



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Fig. 267. Indian fruit sellers in the market of Cordoba, Mexico, where bananas sell at eight cents a hundred.



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Fig. 268. Mexicans twisting rope from the fiber of a plant much like sisal. Monterey, Mexico. Note the sandals on the ground. Can you make a coarse rope of hay, straw, or excelsior?

the scale on the map, for Mexico is a big country. It is one-quarter as big as the United States, but has only about one-seventh as many people. How far is it from the city of Mexico to El Paso, Texas?

The few white people of Mexico speak Spanish and are very polite. There are more native Indians than white people, and a great many of the people are part Indian and part Spanish. When the white man discovered Mexico, the Indians had good farms, large cities, and fine buildings. Some of these buildings were of enormous size and the ruins of them can still be seen. The natives did fine work making ornaments and jewelry of gold and silver. The Spaniards made the Indians work the silver



Fig. 269



© Publishers' Photo Service

Fig. 270. In the corridor which surrounds the patio, or interior court, of a wealthy Mexican's home.

mines, and then sent the silver back home to Spain. But after the Spanish had ruled for three centuries, the Mexicans set up their own government. Unfortunately, they often fight to see who shall be president, instead of electing him by voting, as people should.

Most of the people of Mexico prefer to live in the high, cool plateau that extends from the United States into Mexico, and reaches from the northern boundary to a point south of the capital city, Mexico. It is a very fine city, with a beautiful Spanish cathedral, and it has ten times as many people as has Vera Cruz, the chief seaport on the hot coast.

High mountain ranges on the edges of the plateau shut off the rain, so the country is very dry. Some of it is an inland basin like Nevada, where the streams do not reach the sea. On the long peninsula of Lower California, people are as scarce as they are in Nevada, and like Nevada the

country is very dry. Little can be grown on the Mexican Plateau without irrigation, but the land is high enough to be much cooler and more healthful than is the wet, low plain between Tampico and the Isthmus of Tehuantepec. This hot part of Mexico has winds from the gulf which bring it much rain, and there are swamps with many mosquitoes and other biting insects. The dry parts of Mexico are much like the neighboring parts of New Mexico and Texas, and, like them, have many cattle ranches.

On the plateau, some corn and wheat are grown. On the outer slopes of the mountains, where it is lower, warmer, and more rainy, coffee, tobacco, and many fruits and vegetables are grown and sent up to the mining towns. (Sec. 264.)

There are a few sugar and banana plantations along the Gulf of Mexico, but most of the coast is hot, swampy, and covered with forests. Bushes and climbing vines are so thick that it is hard to pass through them, and people have not taken the trouble to make homes there. Logs of

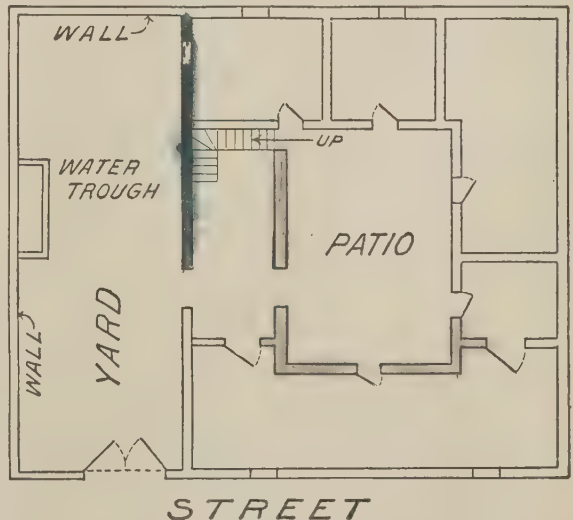
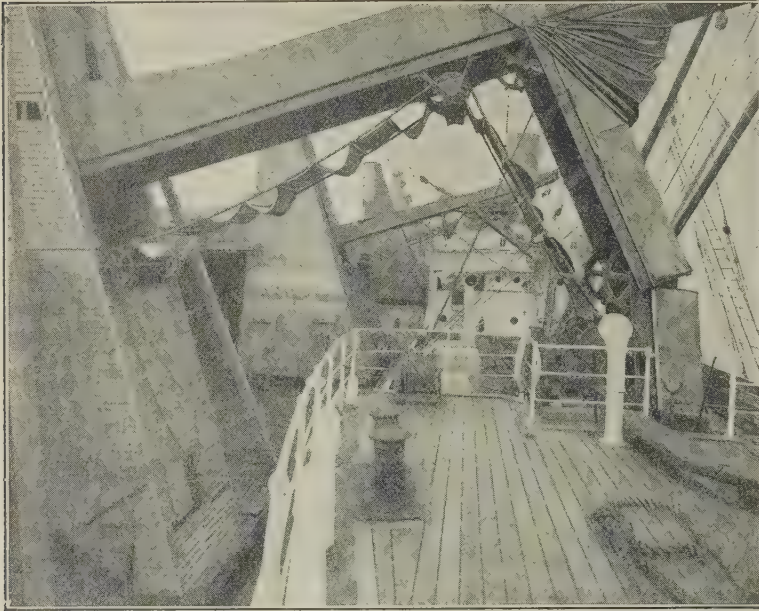


Fig. 271. A plan of a Mexican house. The rooms open out of the patio, or central courtyard. This is Spanish style. The yard is very private.



Courtesy of United Fruit Co., N. Y.

Fig. 272. An endless-belt elevator that takes bunches of bananas from the hold of the steamer into the warehouse at the left. New Orleans. See Fig. 274.

fine wood called mahogany are sometimes taken out of these forests to be used in American furniture factories. Petroleum is found in this low plain near Tampico. It was the port of Tampico that shipped much of the oil that supplied the Allied navies during the World War.

264. Mining.—There are many mines in Mexico, for the mountains of the highlands are rich in silver, gold, and copper. Much of the machinery used in the mines, as well as the food for the men who work in them, comes from the United States. These things are paid for with the metals that come out of the mines. These metals make the chief export of Mexico.

Since Mexico has no good coal, shiploads of it must be brought from New Orleans and Norfolk to Vera Cruz and Tampico. But instead of using coal, the people in the interior far from the coast often cook with charcoal. This is wood partly burned to make it light and easy to carry. It is

often brought from the mountains long distances on the backs of donkeys. Not much fuel is needed throughout Mexico, for the houses are not heated and the food is chiefly corn cakes and beans cooked over an open fire.

265. The West Indies.—The West Indian Islands are a very interesting place to visit. Each island is different from the others, and all are beautiful. The four large ones (name them) are called the Greater Antilles.

Cuba is an independent republic under the protection of the United States. You remember (Sec. 252) that the

Cubans send us much of our sugar. The capital, Havana, has four times as many people as has Kingston, in Jamaica, or any other West Indian city.

The people on the island of Haiti are nearly all negroes whose ancestors were brought over from Africa as slaves. The east end of the island is called the Dominican Republic, and the west end is called the Republic of Haiti. In both of these countries the people have often fought to see who should be president.

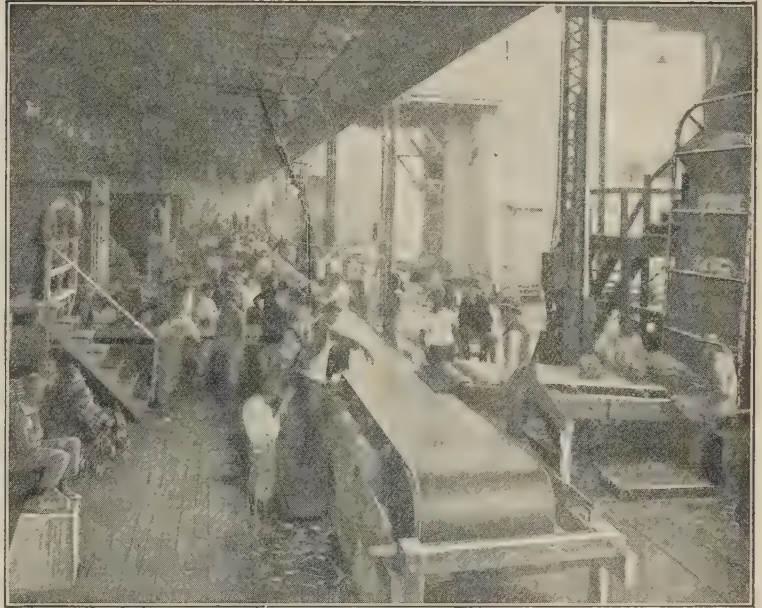
Long strings of little islands that reach from Porto Rico to South America are called the Lesser Antilles, and belong to England, France, and the United States. Nearly all of the people are negroes. In the olden days there were pirates here, but the United States Navy has caused the pirates to be very scarce indeed, and the people of the West Indies now make their living by selling sugar, fruit, and spices.

On the island of Trinidad, there is a lake

of asphalt. It is like very stiff tar. Men can walk on it and dig out chunks, but the holes slowly fill up in a few hours. This asphalt is brought to the United States by the ship load, and is used to pave our streets.

North of Cuba is another group of British Islands, the Bahamas. One of these is San Salvador, the first island Columbus discovered. The people of the Bahamas sell sponges, which grow on rocks in the shallow water near their islands. The sponge fisherman goes out in a boat that has thick plate glass in the bottom. Through this glass he can see where the sponges are, and with a long hook he can tear them from the rocks. When taken out of the water, the animals die, and the sponge is the soft skeleton that is left.

266. The banana trade of the West Indies and Central America.—A big white ship lies tied to the wharf at the port of



Courtesy of United Fruit Co., N. Y.

Fig. 274. Belts take the bunches the whole length of the station, putting them on other belts which take them to the waiting trains. New Orleans. Name ten cities west of the Mississippi River to which they might go.

New Orleans, in Louisiana. Out of this ship come big bunches of green bananas, riding on a white canvas carrier, and falling one after another into the arms of a stream of black men, who carry them into the freight cars waiting on the wharf beside the ship. Hour after hour, the bananas roll out of the ship. All day, all night, and all the next day the men work, for bananas, unlike apples, will not keep long, and the ship has thousands of bunches in her hold. If a bunch has any yellow bananas, it is laid aside to be used in New Orleans. Only the green ones are loaded into the freight cars, one of which is going to Kansas City, another to Butte, Montana, two to Winnipeg, six to Chicago, three to Cleveland, and two to Detroit.

Let us go with the steamer as it returns to the land of bananas for another load. It takes us all day to go from New Orleans to the gulf. We pass the lighthouse, and go out between two long piles of stone.

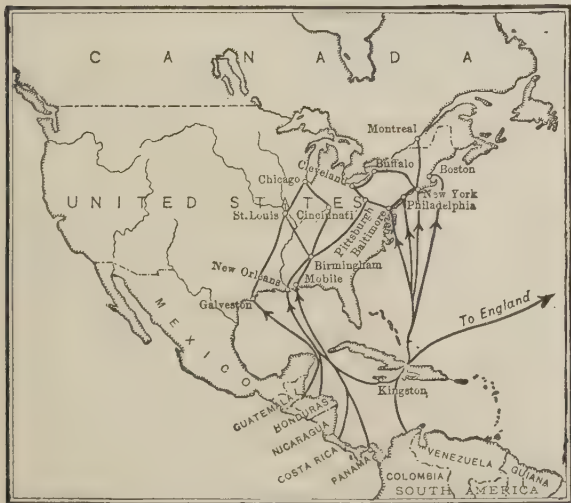


Fig. 273. Map showing the leading trade routes of bananas.

These are jetties, put there at great expense to keep the water at the mouth of the river from spreading out. The jetties make the channel narrow and the current swift, so that it scoops out the mud, carries it out to deep water, and thus keeps the river mouth deep enough for big ships to enter. Many harbors have jetties.

In three days we see the tops of the forested mountains of the island of Jamaica. We sail into the harbor of Kingston, the capital of this British colony. The ship is tied to the wharf, and black men begin to load her with green bananas. We go ashore, take a carriage, and drive out into the country. We meet scores, hundreds, of black women and girls, trudging down to Kingston, each with a bunch of bananas on her head. Some of the women are leading donkeys, each of which carries two bunches on his back.

These people have little groves of banana plants in the patches of ground around their grass huts. The small bananas they eat at home, but when they hear that a steamer has come, they walk off to the town to sell all the good bunches they have. With the money they will buy some of the corn meal, flour, bacon, and clothes, that the banana steamer brings down from the United States.

Next to the sugar of Cuba and Porto Rico, bananas are the chief thing we get from the countries around the Caribbean Sea. In several of the Central American countries many large plantations, with little railroads running through them, have recently been made in the thick forest along the western shore of the Caribbean. The

wind blows from the sea and brings plenty of rain to this coast plain. Most of the work is done by the Jamaica negroes, who go over and work a few months for the banana companies, and then go back to their little homes. Whenever you see a banana, you can think of the black men working among the tall green leaves, where mosquitoes and many other biting insects abound.

About a hundred steamships are busy all the time carrying bananas from Jamaica, Haiti, and the



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Fig. 275. A banana tree bears its fruit in one bunch.

Central American countries, including Panama. Some even come from Colombia, one of the countries of South America. Look at the banana trade map (Fig. 273) and see the cities to which bananas go, and the countries from which they come.

267. Central America, general view.—Most of the people of the countries of Central America are Indians, negroes, and half-breeds. The few white people who rule speak Spanish, for these countries also

were Spanish colonies. In each country there have been many civil wars to see who shall be president of that country. When a man gets to be president there he does as he pleases. All the Central American countries are like Mexico, in that most of the people live on the cool plateau, which is the southern part of the North American mountain system reaching from Alaska to the Isthmus of Panama.

This plateau is a beautiful region of mountain and forest. The people live in villages of one-story stone houses, surrounded by gardens, in which grow many fruits and vegetables that are strange to us. Many of the hill-sides are green with the coffee trees, from which the plateau people get a valuable export. Later we shall read more about coffee trees.

QUESTIONS

1. What nation conquered Mexico, Central America, and part of South America? What did they find, especially in Mexico? What language is spoken now? What people live there? 2. List the products of Mexico. Check the ones you use in your home or see frequently; also one shipped to help the Allied navies during the World War, and one used on the grain farms of the United States and Canada. 3. Where does Mexico get most of her machinery? Why? Coal? 4. Write about an imagined journey on a fruit boat from New Orleans to Kingston, Jamaica. In returning stop a few days and visit a banana plantation.

Describe the cargo, the Mississippi jetties, the loading of the boat with bananas, and the unloading at New Orleans. 5. Explain why cotton may be called a fiber plant. From what part of the plant does the fiber come? From what part of the sisal and hemp plants?

6. What meridian line might a ship follow carrying sisal to New Orleans? 7. What ocean current helps bear the ship carrying sisal to

New York City? 8. In a short paragraph tell how the sisal workers in Yucatan helped America to feed people in Europe during the World War. 9. Name the countries of Central America. How can you tell from the map (Fig. 40) which one is owned by England?

10. State the difference in climate and occupations between the low coast on the Gulf and the plateau country. 11. Add a short paragraph to that of Question 8, telling how a Mexican product helped the Allied navies in the World War. 12. Of what material is the woman's apron (Fig. 267)? It might have come from what American mill town? How did she earn the money for it? How much do you pay for a banana?

Why are they so cheap in Cordoba? 13. Try to invent a geography

game about the products you have been studying. 14. Through what different cities do your bananas come? 15. Draw a plan of an American house and tell how it differs from a Mexican house. Which house would be safer from robbers? 16. Why is firewood costly on the Mexican Plateau? 17. How would you like to eat the same kind of meals the Mexican workman does? 18. In what part of Mexico would you prefer to live? Why? What would an American need to know to get a job in Mexico? 19. What countries send us bananas? To what ports do they come?



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Fig. 276. In Indian dugouts like these your bananas may have started their journey from Central America to your town.

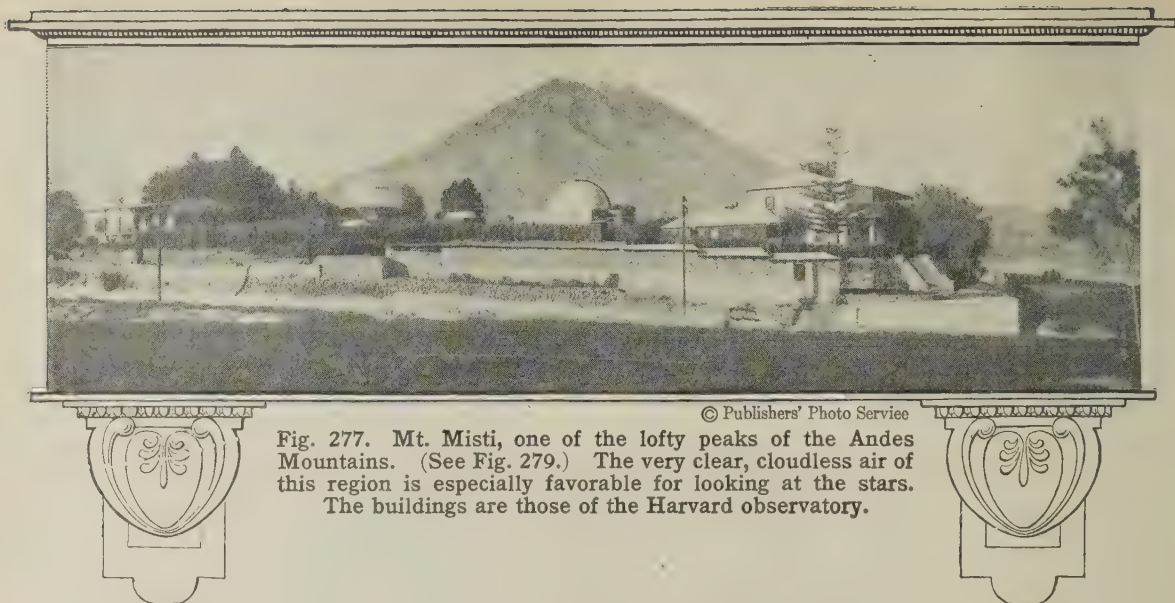


Fig. 277. Mt. Misti, one of the lofty peaks of the Andes Mountains. (See Fig. 279.) The very clear, cloudless air of this region is especially favorable for looking at the stars. The buildings are those of the Harvard observatory.

SOUTH AMERICA

THE NORTHERN COUNTRIES

THE RUBBER GATHERERS

268. A journey to the equator.—We sail twelve days to the southeastward from New York, and our steamer runs into the port of Para, a city near the equator in Brazil, the largest country in South America.

In the town of Para everybody is talking about rubber—taking just as men talk about copper at Butte, Montana, and about fish at Gloucester, Massachusetts. Most of the money that comes to Para is from the sale of rubber. Big, round, black balls of it, each ball bigger than a man's head, are piled up in the warehouses waiting to be taken back to New York on our ship. Many barrels and boxes and bales of goods are taken off our vessel, as are also bundles of barbed fencing wire to be used on the cattle ranches on the island of Marajo near by. This island is one hundred fifty miles wide and lies between two mouths of the Amazon, the largest river in the world.

Some rivers, like the Mississippi and the Amazon, have several mouths. Others, like the Columbia in Oregon and the Plata in Argentina, have only one mouth.

269. The greatest river in the world.—After leaving much freight at Para, our steamer starts upstream. It takes us a whole day and a night to get out into the real Amazon, the river that brings to the ocean more water than any other river in the world. We sail all day on the Amazon without seeing a man or a house or a field. The muddy water flows past us, carrying floating trees that have fallen into the stream. Often we are so far from the shore that it is hard to see it plainly. Whenever we do come near it, we see a very dense green forest that comes down to the water's edge. The leaves form such a thick mass that we never get even a glimpse into the forest itself. Sometimes we see strange birds flying about. The

only sign of human life that we see during the first five days of our journey is a sheet-iron warehouse on the river bank. It is there to store rubber. There is a little village of grass huts about it.

On the sixth day, when we have gone farther up the river than St. Louis is from New Orleans, we stop at the city of Manaos. It is a little city, no bigger than

many of the towns in the Central States or New England that we did not mention, when we studied these, because there are so many cities in those states. But here, in the tropic forest, Manaos is the only city on two thousand miles of Amazon shores. It is in a swamp, too (see Sec. 188), and all the houses are built on piles to keep them out of the water when, in the rainy season, the river rises. In this region there

are seasons when it rains every day, and other seasons when it does not rain at all for weeks.

In the streets of Manaos are trolley cars that were built in St. Louis and brought down in sections. Nearly everybody in Manaos goes trolley riding in the evening. You must either do that or sit by an electric fan, if you expect to keep cool in such a hot, muggy place. The map (Fig. 279) shows why it is so hot; we are close to the equator, where it is always mid-summer. And the rainfall map (Fig. 293)

shows that the whole Amazon valley has a great deal of rain, so that it is damp and sultry.

At Manaos, as at Para, the people talk of rubber, rubber, rubber. Piles and piles of it are stacked up in the freight sheds. More freight is taken off our steamer and left for the use of the people of Manaos. Then for six days more we sail up the river,

on and on, through the dark forest. There seems to be no end either to the river or to the forest. We are now farther from the Atlantic Ocean than Canada is from the Gulf of Mexico. We have sailed into another country, Peru, and we find there the little town of Iquitos.

270. The rubber gatherers.— Here several dark-skinned Portuguese rubber dealers, passengers on our boat, go ashore. We go with one of



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Fig. 278. Placing a cup to catch the milk that flows from the fresh gash in a rubber tree.

them to see what he will do. First he has the many boxes of goods for his warehouse taken off of the ship. As we look about the streets, we see Indians wearing straw hats, cotton shirts, and blue overalls; they are idling about the streets. The rubber merchant makes a contract with two of them to get him some rubber. He gives them six long knives that look like butcher knives and are called machetes, some clothes, a small tent, some mosquito netting, and some flour, corn meal, dried beef, dry beans, and canned salmon. These



Fig. 279



Fig. 280. Relief Map of South America.



Fig. 281. Rubber gatherers' boats at a high bank on the Amazon River near Iquitos, Peru. Compare these boats with the one shown in Fig. 292.

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things the Indians will need on their journey up the river to get rubber.

The Indians load their boat and paddle away up the Amazon. The first night out they camp on the bank. The next morning they turn into a small river, a branch of the Amazon. This stream is so narrow that the branches of the trees sometimes meet overhead, and the Indians have trouble getting their boat through the tops of trees that have fallen into the stream. One day the rubber seekers shoot a wild pig that is busy rooting on the bank; and once they see a jaguar, a large cat-like animal, lying on a limb of a tree waiting to spring on some passing animal. One night they will have to sleep in the boat, because the shore is so muddy that there is no place on it for the tent. The men need to wrap up in mosquito netting if they are to get any sleep, for the whole Amazon buzzes night and day with mosquitoes and other biting insects.

After five days' paddling up this branch stream, the Indians come to their own village of leaf houses. The village is on a

high point of the bank, thirty feet higher than the river, where it cannot be flooded when the river overflows in the rainy season.

271. Gathering rubber.—

Six Indians from the village take the new machetes and start into the forest, hunting the rubber trees. These trees are twenty to fifty yards apart. To get from one tree to the next, a path has to be cut with the machete through the tangled vines and bushes.

In two days each man has found his string of rubber

trees and has cut the path from tree to tree. The next day he taps the trees by cutting big gashes in the bark and fastening up tin cups to catch the sap that flows out. The following morning he goes around with buckets and collects the sap, which is white like milk.

This sap is made into rubber by dipping a wooden paddle into the sticky sap and then drying the sap in the smoke of burning palm nuts. After much dipping and drying, there is on the paddle a big, black ball of crude rubber, a ball as big as your head, such as we saw in the warehouses at Para, or in the automobile tire factories of the United States. (Fig. 282.)

The smoke that dries the rubber is so strong that sometimes it makes the men blind.

In a few days the rubber gatherers must chop out the paths again, for in that hot, wet country the vines and bushes grow so fast that it is almost impossible to keep the ground clear.

After a few weeks, the rubber trees have been bled to death, and our Indians chop

out new paths to fresh trees. At the end of three months, the rain begins to fall every day, the river rises, and water stands in the forest. This ends the rubber gathering season. The canoes are now loaded with the precious balls of rubber, each of which is worth several dollars, and the Indians paddle down to Iquitos. The Portuguese merchant is there to take the rubber, which pays for the things that the Indians got from the merchant when our ship came there. There is enough more rubber to pay for another boat load of supplies. These will have to last the people in the village until the merchant comes again next year.

272. Flat plain with few people.—People are few and far between in the Amazon Valley, but altogether there are thousands of Indians on the many little rivers of the vast forest. Each year they are chopping their way through the jungle, fighting mosquitoes and snakes, and smoking the rubber that we use the next year for rubber shoes, bicycle and automobile tires, garden hose, rubber toys for the baby, pencil erasers, and for many other useful things.

This Amazon Valley is a part of one of the flattest plains in the world. In the season of daily rain the rivers overflow for miles and miles on each side. In one place you can actually get into your canoe and paddle from the Amazon Valley into the valley of the Orinoco, which is north of the Amazon. The place where you might do this is in a big swamp where a little river called the Cassiquiare flows at one end into the Rio Negro, a branch of the Amazon, and at the other end flows into a branch of the Orinoco, the great river of Venezuela. (See Fig. 284.)

At the southern edge of the Amazon



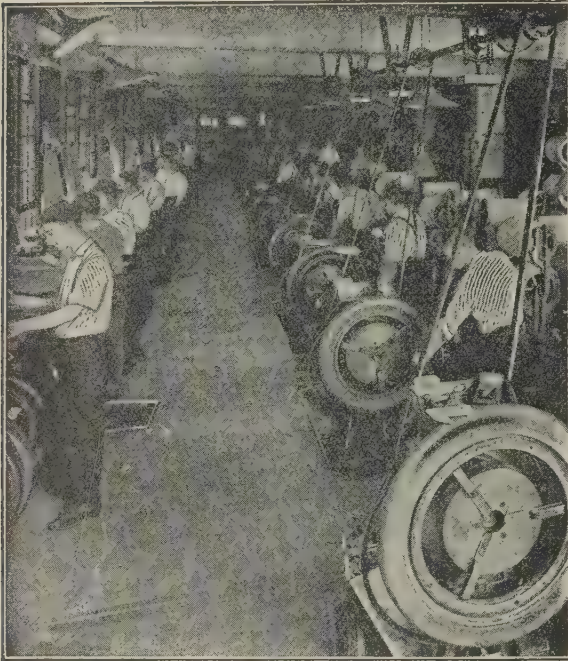
Photo. Dr. William C. Farabee, University Museum, Philadelphia

Fig. 282. Drying rubber on the banks of the Ucayali River, Peru. What food does the North American Indian preserve by smoke? See Sec. 139.

Valley, there are large swamps that flood in the rainy season, so that a canoe can go from the branches of the Madeira River into the headwaters of the Paraguay River. If we should make this journey from the mouth of the Orinoco to the mouth of the Paraguay, we would begin to think the world had almost no people in it at all, so many, many days would we be paddling through the forest seeing only birds, mosquitoes, snakes, monkeys, and a few other wild animals. Occasionally we would pass a small village of Indians, some of whom had never before seen a white person.

Near the southern end of the journey, we would get out of the hot country, out of the forest, and into the land of farms and ranches. Steamboats would be on the river, even great ocean steamers, bound for London, Antwerp, and New York. What capital cities would we find on this river?

273. Rubber in other lands.—The great Amazon Valley does not grow all the rubber in the world. There is land enough and to spare; but there are not workers enough because the place is so unhealthy.



Courtesy of Firestone Tire & Rubber Co., Akron, Ohio

Fig. 283. Tire-making machines, Akron, Ohio.

Several kinds of trees will produce rubber, and some of them grow wild in the forests of nearly all hot countries. Some rubber comes from the lowland forests of Mexico, of Central America, and of some of the West Indian Islands. The black men of the African forests hunt out and kill their rubber trees just as the Indians do in South America. There is the rubber port of Boma, on a great African river near the equator (Fig. 404), just as there is the South American port of Para on the opposite side of the Atlantic.

274. Rubber plantations.—Since the automobile has made us need so much rubber, we have learned how to plant rubber trees in orchards, just as we plant apple, peach, or orange trees. If you were going to set out a rubber plantation, you would want to go to a place where you could hire people to work on it. To find places where there were plenty of helpers, the Englishmen, who started rubber plan-

tations, went to the islands of Ceylon and to Singapore, in southern Asia. (Fig. 444.)

The island of Ceylon, about the size of the state of Maine, has more people than are to be found in all the Amazon Valley; and near Singapore there are Malays and hundreds of thousands of Chinese who come down from Canton and Shanghai to get jobs on the rubber plantations.

Most of the world's rubber is now grown in these plantations. It comes to America and Europe on the steamers that call on the way back from China. The plantation rubber trees live on from year to year as apple trees do, for the European overseers do not let the men bleed the trees to death by tapping them too much.

QUESTIONS

1. Compare the rubber gatherer (Fig. 278) with the rosin gatherer in Georgia. What is alike about them? 2. What two things about the climate are good for plants but bad for man? 3. From what you know of the climate of the Amazon Valley, account for the great volume of water in the river. 4. Do the boats in Fig. 281 look like those in Fig. 254? Do you think they were made in the same way? 5. Find out from Section 292 why the rubber merchant is a Portuguese.

6. Recalling the different forest products you have studied in this book, fill out the following chart. (Do not forget the sap products.)

FOREST PRODUCTS.	COUNTRIES WHERE GROWN.

7. Look at the map of the world. In what other places do you think rubber might grow? 8. Trace the canoe route from the mouth of the Orinoco to the mouth of the Parana River. When only can this trip be made? Is it easy or dangerous?

9. Trace the route followed by the rubber from Iquitos to New York. 10. If you have a public library where you live, get Theodore Roosevelt's book "Through the Brazilian Wilderness." Perhaps your teacher will read aloud parts that tell what difficulties Mr. Roosevelt and his son went through while searching for an unknown river.



Fig. 284

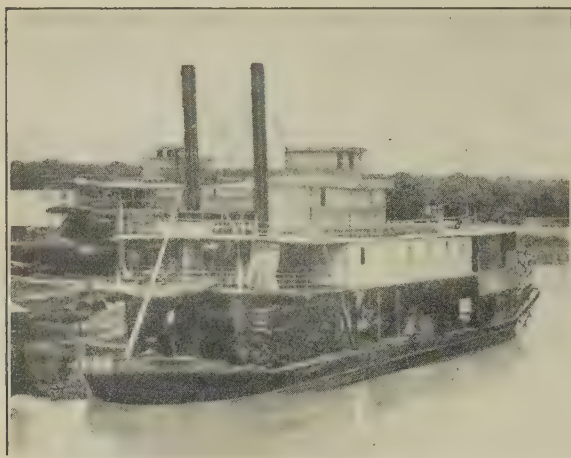


Photo. Publishers' Photo Service

Fig. 285. Steamboats on the Magdalena River. What do they use for fuel? Just the edge of the stern paddle can be seen. The boat is Mississippi River style.

CLIMBING TO THE COFFEE PLANTATION

275. A trip to Colombia.—Let us go and see how our cup of coffee comes to us. After seven days at sea from New York, we land at the little city of Cartagena on the north coast of Colombia. The few white people we see are dark-skinned Spaniards, but most of the people are black. Mules with bells on their necks pull a little street car along the rough, cobblestone street. This is not a very busy city.

From here we take a train and ride for three hours through pastures and the dark green forest. Finally we come to the end of the railroad, which is on the bank of a river, the Magdalena. The river does not look very large on the map, but it carries more water than the Ohio River does. Steamboats cannot go into it from the sea as they go into the Mississippi, for its mouth is choked with sand, which spreads out into a wide delta and makes many shallow mouths. Neither are there any jetties here, as at the mouth of the Mississippi, so the freight coming down the river has to be unloaded from the river

boats and taken by train over to the northern seacoast at Cartagena, the chief port of Colombia.

276. Up the great river.—We go up the river on a steamboat built in the United States. It is driven by a big wheel, placed at the back of the boat where it will not strike floating logs. The river banks are lined with pastures, swamps, and forest, in which are some rubber trees. We see but one or two little straw-house villages each day. Hour after hour we pass the green forest of the hot and unhealthy tropic lowland. When the boat stops, the mosquitoes bite us.

277. The pack mules.—On the fourth day we stop at a town on the west bank of the river. Hundreds of pack mules stand in the streets near the wharf. Much freight is unloaded, but we notice that there are no big boxes. That is because everything must be carried on mule back, there being no railroad or wagons here. There is only a path or trail, and that is so bad that sometimes the mules sink in the mud nearly up to their bodies. Traveling or getting supplies in Colombia is hard work.



© Publishers' Photo Service

Fig. 286. Carrying coffee sacks on board steamer at Santos, Brazil. In what other way might the sacks be put on board?

On the fifth day the water of the river becomes swift. The boat goes very slowly and finally stops. It can go no farther; there are falls just ahead.

We are surprised to see a railroad here, for we are six hundred miles from the ocean. The railroad was made to carry freight around the rapids and falls. All the freight in our steamboat is unloaded and put into little wooden cars. We get in along with the other passengers

from the boat. Several times, as we ride along the bank of the river, we see the white foam and hear the roar of the waterfalls. After we have ridden several hours and have traveled seventy miles, we reach still, deep water once more, and the railroad ends. Another steamboat, smaller than the last one, is tied to the bank. How did it get here? It was put together right here, from pieces made in the United States and sent out in boxes.

On the boat once more we ride all day



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Fig. 288. Pack mules loaded with coffee sacks ready to start for the Magdalena river from the Colombian highlands. What will they bring back?

up the river, until it becomes narrow and the boat can go no farther. It is a week since we left the ocean and we are still on the Magdalena River, at a little town where the railroad starts to Bogota, the capital of Colombia.

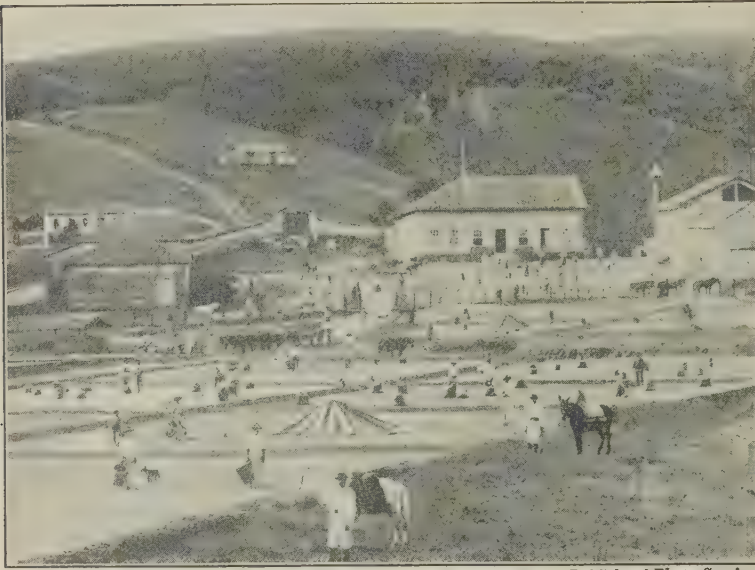
278. The coffee plantations.—Our little train begins to climb. Up and up we go. The air grows cooler. After several hours of this riding, we are four thousand feet above the level of the sea. Soon we begin to pass villages of stone houses. In a big

paved yard in the midst of one of the villages we see people with hoes stirring piles of something. They are drying coffee in the sun. The people of this village are coffee growers. The green forest we see on the mountain side above the village is not a wild forest, but a grove of carefully planted coffee trees. The coffee tree is very different from the rubber tree; it loves the cool, well-drained mountain side rather than the hot,



© Publishers' Photo Service

Fig. 287. Picking coffee on a plantation in Brazil. What is the next thing that will be done with the berries?



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Fig. 289. A coffee plantation on the road to Bogota. Groves of coffee trees are on the hilltop. Coffee sacks and piles of coffee are on the drying floors in the foreground. What is the next thing that will be done with this coffee?

damp lowland in which we found the rubber trees growing. The coffee trees are well cared for. Bushes and weeds are cut away, and the trees are kept trimmed so that they are not much higher than a man's head. Thus it is easy to pick the berries.

The coffee berries look like red cherries. They are picked from the trees by hand, the soft flesh is thrown away, and the seeds are then put through several machines to get them ready for market.

See what a handy crop coffee is for these highland people. Their plantations are often far back in the mountains, but they can put two sacks of coffee on the mule's back, and away the animal goes. If they tried to ship lumber, they would find that the mules could not carry it. If they tried to ship wheat or corn, they would find that neither crop would bring enough money to pay the freight. A sack of coffee brings much more money than a sack of wheat or corn would bring. The mule that carries

the coffee sacks down to the boat landing or the railroad station brings back two packages of freight. These two packages contain provisions for the people in the village. We are surprised to see how many different things there are in the store in this village.

279. The city on a high plateau.—Twelve hours after leaving the Magdalena, our train reaches the edge of a high, level plain called a plateau. It is higher than the top of any mountain in our own country east of the Mississippi River. It is cool and

pleasant here, and in an hour and a half our train takes us thirty miles to Bogota, the capital. We are surprised to see what a big city it is, and what fine buildings it has, and how many white people there are. During our journey from the sea we have seen few people besides Indians and negroes.

The nights are so cool that it feels good to sleep under blankets. We are happy to find that there are no mosquitoes. This is all because we are on the plateau, a mile and a half higher than we were at Cartagena. It is so much more pleasant here than on the hot, low plain that we can now understand why people are willing to make the long, hard journey that they must make to reach here.

For their own food, the plateau people grow corn, beans, and many vegetables, and sometimes wheat. They have sheep and cattle, and sell hides as well as coffee. They also sell gold and emeralds, which they dig from the mountains.

280. Other coffee countries.—Look at the map (Fig. 279) and you will see that the plateau of Bogota goes on northeastward into Venezuela where there are several towns, among them Caracas, the capital of Venezuela. Coffee is grown here too, and in some of the stores in the United States you will find coffee called Maracaibo and another kind called La Guaira, named from the Venezuelan ports that ship it to the United States and to England.

Caracas, the capital of Venezuela, is nearer the sea than Bogota and has a railroad that goes to La Guaira, but the little trains have a hard climb pulling up the mountain. The people in all of these countries like to live on the plateau where it is cool. They nearly all export coffee and hides, and often have to send them down to the seacoast on mule back, because it is so hard to build roads and railroads in such steep places.

281. The greatest coffee country.—Coffee is grown in many countries, but there is one country that ships more of it than all other countries together. This great coffee shipping country is Brazil. In that large country the plateau comes close to the ocean; hence it is easily reached from the seaports. From Santos, the great coffee shipping port, to Sao Paulo, the metropolis of the coffee district, the railroad cars are pulled up to the edge of the plateau by a cable, as cars are sometimes pulled out of mines.

On the plateau back of Santos and Rio de Janeiro are coffee plantations with thousands of acres planted with the little green trees. Sometimes they stretch almost as far as one can see. Two-thirds of the world's coffee is grown here and shipped from Santos and Rio de Janeiro. Ask your grocer about Rio coffee.



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Fig. 290. A view down one of the streets in Santos, Brazil, the largest coffee port in the world. Across the harbor, the highlands upon which the coffee trees grow can be seen.

Many of the people who grow coffee trees have come from Italy to work in the coffee plantations, just as the people of Europe have come to the United States to get the high wages that our industries offer.

QUESTIONS

1. Tell about the difficulties of a trip from the coast of Colombia to the coffee region. 2. How high above the sea is the coffee plantation? To what height have you been? How high is your home? 3. Look at the coffee plantation (Fig. 289). Is the climb up and down the hills behind the house steep? Why are mules generally chosen for these climbs? 4. Why is coffee roasted at the big seaports where it is unloaded? Is sugar refined there? Are peanuts roasted there?

5. What makes you sure that a bag of coffee is too heavy for you to carry? (Fig. 288.) 6. Locate and tell something about Rio de Janeiro; Bogota; Santos. What city in North America is about as far north of the equator as Santos is south? Are the trees and plants in them alike?

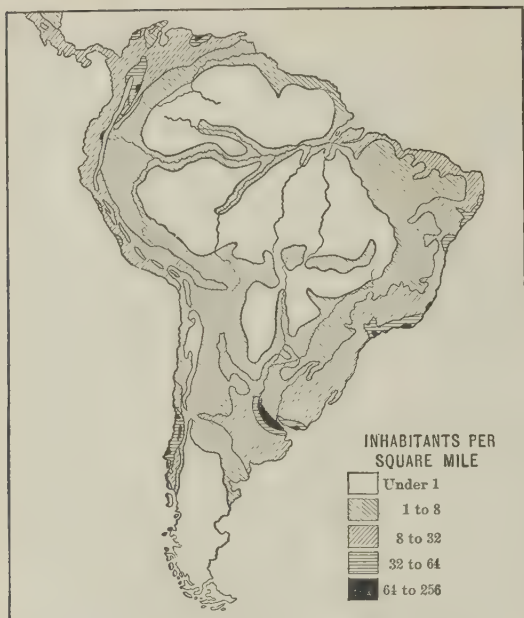


Fig. 291. Population map of South America.

GENERAL VIEW OF SOUTH AMERICA

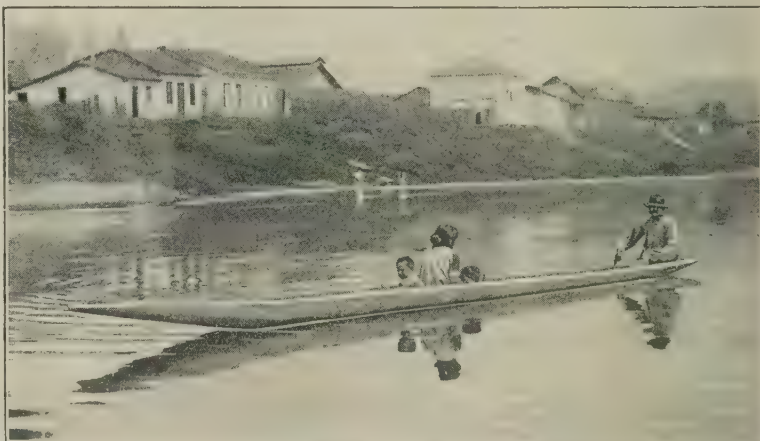
282. The Isthmus of Panama.—The map (Fig. 40) shows that South America lies a little to the east of North America. The Isthmus of Panama connects the two continents, but no one ever goes from one continent to the other by way of the isthmus, because it is covered with tangled forest like that in the rubber country. It is much easier to go from one continent to the other in ships than to cut roads through such a forest.

283. The wide part.—North and South America are alike in several ways. First each has a wide northern part. In North America much of this wide part has few people because it is so cold that it is hard for people to keep warm, and but little food can be grown. The wide part of South America has few

people because it is too hot and too wet.

284. The western highlands.—Each continent has a long western highland close to the Pacific, but the western highland of South America, the Andes Mountain system, is much narrower than the western highland of North America. Measure them on the maps and see for yourself. (Figs. 48 and 279.)

The western highland in South America is *much* higher than is the one in North America. We have already seen that it is a mile and a half high in Colombia, but it is *over two miles* high in Peru and Bolivia. On this place is a lake called Titicaca that is nearly *three miles* above the level of the sea. There are steamboats on this lake, and a railroad comes to its shores from the Peruvian port of Mollendo. People used to say that the first steamer on that lake cost its weight in silver, because men had so much trouble getting it over the high Andes. It was carried in sections on the backs of mules that had to climb along stony ledges in the sides of steep, narrow valleys like the canyon of the Colorado River in Arizona. It was very hard work,



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Fig. 292. A family of native Indians in their dugout canoe on one of the smaller rivers in the southeastern highlands of Brazil, near Santos. Which boat is easier to build, this one or the Eskimo's?

and the workers had many accidents. Once a mule fell from a cliff and his load was lost. Then the steamer had to wait months to be finished, until new pieces came all the way from England.

We expect land near the equator to be hot, but this plateau near Lake Titicaca is cold because it is so high. Sometimes the Indians wear wool masks to protect their faces from the biting wind.

285. Great central valley.—The third likeness between the two Americas is that each has a great river valley and a great low plain in the center. What are the names of the rivers? Can you tell which of these valleys is of more use to man? (See Secs. 103 and 272.)

286. Eastern highlands.—The fourth likeness is that both continents have eastern highlands. In North America the Appalachian Highlands have the finest coal field in the world. (Sec. 196.) In South America the Brazilian Highland has no good coal, but it has the largest iron ore deposits in the world. Very little iron is made here, however, because there is no coal with which to smelt it. The Brazilians are beginning to ship the ore to Baltimore, where it is made into iron and steel. Then Brazil

buys some of it back for railroads, steel buildings, and many other things. The eastern highlands of both North America and South America are divided into two parts by great rivers, the St. Lawrence and the Amazon. Which is the more useful?

The highland in North America to the north of the St. Lawrence has few people in it (Sec. 54), because it is rough, rocky, and cold. The north-eastern highlands of South America (Guiana) have only a few Indians in them because they are surrounded by wide hot plains having heavy rainfall, thick forests, and an unhealthful climate. We know very little about that region and brave men think it is a dangerous place to explore. Some tribes of Indians there never saw a white man.



Fig. 293. Rainfall map of South America.

287. Climate.—There is frost once in a while in the Brazilian coffee country, and in all of South America to the southward. You see, however, that most of South America is a land without frost. Most of North America is a land of frost, as you will see by re-reading Section 179.

There is snow in southern Chile and southern Argentina, but there is no large region in South America where farmers must build barns for their cattle, as people



Photo, Dr. William C. Farabee, University Museum, Philadelphia
 Fig. 294. A group of Corajas Indians, some of the native people of Central Brazil. See the tatoos on their bodies.

do in New England, the North Central States, and many countries in Europe.

288. The men of the hot land and of the frost land.—The white man is a man of the frost lands. Nearly all the countries of the world that have no frost have people with dark skins—red, yellow, brown, or black. Since the frost land is so much the smaller part of South America we see that this country is not as good a country for the white man as is North America. We have already seen (Sec. 279) that most of the people in Colombia, Venezuela, and the Amazon forests are Indians, and we are not surprised to learn that South America has only about half as many people as North America. It has only about one-third as many *white* people as North America. Many of these are people from Europe who have gone to the frosty part of South America and made farms and built railroads and cities, just as others

have done in North America. We shall soon read about them.

QUESTIONS

1. Write a comparison between North America and South America, following the model:

HOW NORTH AMERICA AND SOUTH AMERICA ARE ALIKE.

NORTH AMERICA.	SOUTH AMERICA.
1. Wide at the north	
2.	
3.	
4.	
5.	

2. Which river, the Mississippi or the Amazon, flows across more parallels or latitude? 3. Why is the St. Lawrence Valley better populated than the Orinoco Valley? the Mississippi than the Amazon Valley?

4. Why do not large ocean steamers enter the Orinoco as they do the St. Lawrence? 5. Which is the largest country of South America? of North America? (See Reference Tables.)

GENERAL VIEW OF THE NORTHERN COUNTRIES OF SOUTH AMERICA

289. Colombia and Venezuela.—We have already seen that Colombia and Venezuela, two of the three countries of northern South America, have their capital cities and most of their people on the high plateau of the northern Andes, where the scenery is beautiful and the climate is comfortable. Each of these countries is larger than the Middle Atlantic and South Atlantic States together, and each has a large part of its land in the wide, open valley of the Orinoco River. Most of this valley has a rainy season and a dry season. In the rainy season much of it is flooded swamp. Then the grass grows quickly. In the dry season the grass turns brown and the leaves in the forest dry out, so that grass fires and forest fires will run for great distances. These kill most of the trees, so that most of the Orinoco Valley is a treeless, grassy plain.

There are many herds of cattle here, but not nearly so many as there would be if the climate were most healthful, and there were not so many mosquitoes and other disease-carrying insects. Only a few people live here, and the little trade they have is carried on by small steamers that run up the Orinoco from Port of Spain in the island of Trinidad.

290. Guiana.—Guiana is the only part of South America that is not independent. England, France, and Holland each has a colony there. Guiana has very few white people, and they all live near the seashore, because the northeast wind blowing in from the ocean makes the shore cooler and more healthful than the interior. The chief exports are cane sugar, gold and balata, a



Fig. 295. Railroad map of South America. Compare this map with the population map, Fig. 291, and see that the most people and the most railroads are in the same regions. Why are so few railroads in the central part?



Courtesy of University Museum, Philadelphia

Fig. 296. Native Indians in southern British Guiana starting a fire.

gum that the natives gather from trees in the forests. It is used in water-proofing electric wires.

THE EASTERN COUNTRIES

GENERAL VIEW

291. Brazil a country of great size.—It is hard for us to understand what a big country Brazil is. It is actually larger than the United States and France together. But it has fewer people than France, and less than a fourth as many as the United States.

We know that there are not many people in the Amazon Valley of Brazil. In much of the highland of interior Brazil so few people live that there is not a railroad or a city for hundreds of miles. The population map (Fig. 291) and the railroad map (Fig. 295) show that most of the people of Brazil live on the highland in the southern part of the country, where the great export, coffee, helps supply them with money to buy flour from Argentina; coal, cotton, and woollens from England; machinery, oil, and lumber from the United States; and other manufactured things from many other countries. Rubber from the lowlands brings in the rest of the money they need for this trade.



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Fig. 297. A beach scene in the harbor of Rio de Janeiro. The docks are in another part of the harbor. See how the highlands extend to the edge of the sea.

292. The Portuguese language.—The people along the coast and the railroads speak Portuguese, for this country was settled by people from Portugal, while Spaniards settled all the rest of South America and gave it the Spanish language.

293. Large cities.—Rio de Janeiro is a large, beautiful city. Only three cities in the United States are larger. It has a harbor made beautiful by high, steep hills, with bare rocks and green forests. Many of the wealthy people, both native and foreign, have their homes in a suburb two thousand feet up on the edge of the plateau, to which they go by trolley cars driven by water power.

Sao Paulo, the coffee center (Sec. 281), is a prosperous city, having about as many people as San Francisco.

Along the coast, between Para and Rio de Janeiro, there are several cities with farming districts near them. Most of the people along this coast are negroes or

mulattoes, whose ancestors were brought over from Africa as slaves to work in the sugar and coffee plantations. Bahia and Pernambuco are the two largest of these east coast cities. Steamers from the United States and England call there for sugar, cotton, tobacco, and hides.

Hides are an important export from most of the Brazilian ports, as there are many cattle ranches on the plateaus of the interior. For a long time, hides were the only goods that could be carried out on carts and pack mules. But now that meat is so valuable, some railroads have been built to the interior to bring the cattle to the coast. There the animals are slaughtered and the meat is made ready to be put into cans as is done at Chicago or Kansas City. Meat from the Brazilian plateau, packed in American tin cans, went to France for the Allied Army during the World War.



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Fig. 298. The cathedral and plaza (public square) of Para, Brazil. Where else have you seen trees like these? In what kind of climate do they grow?



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Fig. 299. Carcasses of beef in an Argentine cold storage plant awaiting shipment to England.

The easiest way to get from Rio de Janeiro to some of these cattle ranches is to go by ocean steamer the thousand miles to Buenos Aires, and then to take a river steamer, which will, in about a week, land you at Asuncion the capital of Paraguay. From there a smaller steamer will carry you in another week up to the cattle ranches of interior Brazil, a region of great open spaces and broad grazing lands. The cattle industry is increasing there and is now the main industry.

294. The Plata countries.—Three countries, Argentina, Uruguay, and Paraguay have most of their trade with the other countries of the world by way of the Plata River.

We have already heard much about Argentina when we were reading about wheat (Sec. 81), corn (Sec. 74), meat (Sec. 87), and wool (Sec. 114). You remember that Argentina is nearly one-third as large as the United States, but you understand that the map of South America is on a smaller scale than are the maps of the United States.

Argentina and Uruguay are very, very different from the other countries of South America. They are in the land of frost,

where white men can be strong and healthy. Though western Argentina is a dry country, there is enough rain for farming in eastern Argentina and Uruguay. Large areas of land like those of Iowa and western Canada, rich, level, and without trees, are ready to plow up and plant to a crop. Here we find Italian and Spanish immigrants using American farming machinery and cultivating large fields of wheat, corn, and alfalfa. In other places there are great flocks of sheep and herds of cattle. Big meat packing plants are in the cities.

295. Argentina and Kansas.—The rainfall map shows that the rainfall of western Argentina is light. This country is like Kansas, good for corn in the east, good for wheat to the west of that, and, still farther west, so dry as to be good only for ranching. This dry Argentine ranch country reaches from the hot plains of Bolivia southward to the Straits of Magellan in the land of snow.

Argentina has about as many people as has Pennsylvania. Its capital is a rich and prosperous city with many fine buildings, and with nearly as many people as Chicago.



© Publishers' Photo Service

Fig. 300. Grain elevators, steamers, sailing vessels, lighters, and tugs along the docks at Buenos Aires.

It is the chief trade center for all Argentina, and for Paraguay as well. It is by far the greatest railroad center in South America, and the largest city south of the equator.

Uruguay is a country not quite so large as Kansas. It is very much like the best part of Argentina and has the same industries. Sheep and cattle are the chief wealth. Montevideo, its capital, is a well built city having as many people as Washington, the capital of the United States.

295. The Gran Chaco and Paraguay.—Northeastern Argentina is in the land of heat, heavy rains, and forest. This region is called the Gran Chaco (Great Forest).



© Publishers' Photo Service

Fig. 301. The capitol building of Argentina, Buenos Aires. What building in the United States does this one resemble? For what is each used?

Most of the few people who live in the western Chaco are Indians, who have but little to do with the white men.

The eastern part of the Gran Chaco is in Paraguay, a country larger than Uruguay. As it is a hot and humid country, white people have not gone there as they have to Argentina and to Uruguay. Most of the people of Paraguay are Indians; some are negroes; and a few are white. For many years, all the trade of Paraguay

has gone up and down the Paraguay River on steamers. It is warm in Paraguay when it is frosty at Montevideo and Buenos Aires. These places are to each other as Florida is to Philadelphia and New York.



Courtesy of U. S. Dept. Agr.

Fig. 302. An Italian farmer in front of his thatch-roofed shack on a rented corn farm in Argentina. Corn is stored in the fodder-covered stack at the left. Do you think his house would look like this if he owned the farm?

Early in the season steamboats come down from Paraguay loaded with vegetables and fruit to be eaten by the people of Buenos Aires and Montevideo, when it is too cold to grow such things near these cities. Oranges are so plentiful in Paraguay that they are sometimes used for pig feed. There are many cattle ranches in Paraguay, and Americans from Chicago have recently built meat packing plants there, and are sending the meat to Europe by way of Buenos Aires.

QUESTIONS

1. In the Argentine meat packing house (Fig. 299), what do you notice about its clean appearance? Its size? The amount of meat in it?
2. Where in the North Central States would you find such packing houses?
3. Look at the number of grain elevators in the harbor of Buenos Aires (Fig. 300). Along what waters in the United States are such elevators?
4. Send four cents to the *New York Times*, New York City, for a copy of that paper. It advertises steamers to South America. Find the ports to which they go. How many ship notices are in this paper? In other papers? Make a map showing the routes of the sailings advertised.
5. How does a person travel from the capital of Brazil to the capital of Paraguay? To the ranches of Western Brazil?
6. How would you travel from your home to the United States cattle ranches?
7. Why do you like the capitol building in Buenos Aires? Of what is it made?
8. What beautiful view is there from Santos? From Rio Janeiro?

THE WESTERN COUNTRIES

THE NITRATE WORKERS

297. A land without rain.—Chico is an Indian boy whose father works in a nitrate plant in Salar, Chile, about thirty miles from the town of Antofagasta. Chico never saw but one rain in his life. That was a little sprinkle five years ago, and there was not enough of it to wet his clothes. In the long strip of country

where he lives between the Andes and the ocean, rain is a very great rarity indeed. The climate is so dry that nothing whatever can grow. In 1880, the armies of Chile and Peru fought a battle out in this desert, and for years afterward the dried bodies of dead men and dead horses were to be seen lying where they fell in the desert. This fact shows how very dry indeed this part of the world is.

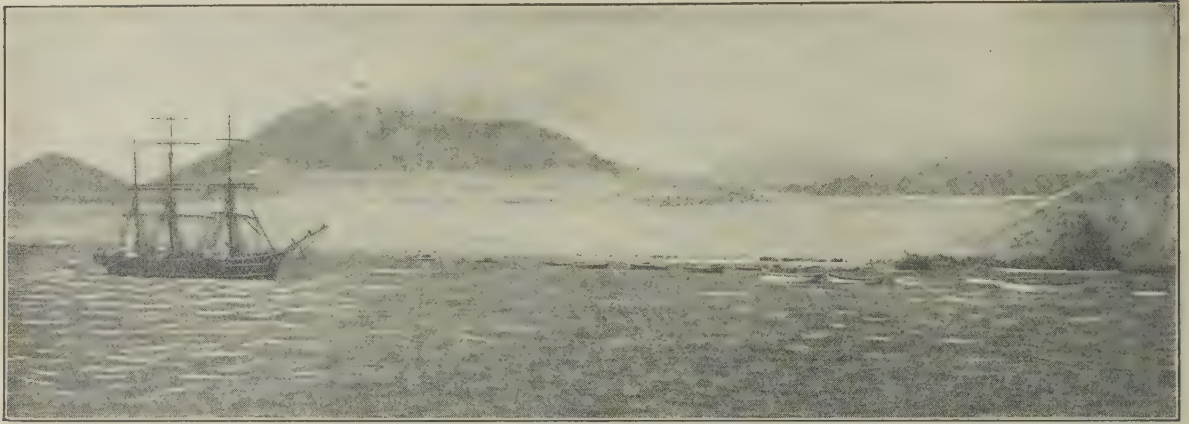
We all know that salt will quickly dissolve in water, but here in this desert of Peru and Chile, and in a part of Bolivia near by, the salt just lies on the ground, shining like snow, because there is no rain water to carry it away.

All day long out in this salty plain, Chico's father shovels a kind of salt called nitrate into a cart and the driver hauls it over to the nitrate factory. There is no garden, no tree, no grass, around the little stone house where Chico lives. When he gets his mother a bucket of water, he has to buy it, because water is so scarce. All the water in this village of Salar is brought in a pipe from a stream at the foot of a snow field high up in the Andes, nearly one hundred miles away.

298. The trade of the wet land with the dry land.—Every two days a train comes from Antofagasta, bringing potatoes, cabbages, apples, and all kinds of food for the people at the nitrate works, and bales of hay and sacks of grain for the horses and mules.

But Antofagasta is almost as dry as Salar. All of the food which this town sends to Salar, and all of the food which the people have at Antofagasta, comes in ships from southern Chile, where it rains and where men can have farms.

Antofagasta is about as far from the equator as is the tip end of Lower Cali-



© Publishers' Photo Service

Fig. 303. A scene along one of the rainless parts of South America's west coast. This is the way the nitrate workers' shore appears. What would you see if this coast had regular and heavy rains?

fornia. You remember that Lower California and Arizona are very dry, while there is a great deal of rain in Washington State, farther away from the equator. It is that way in South America also. Central Chile has some rain and a temperate climate like California. Here oranges, grapes, pears, peaches, apricots, and other fruits are grown as they are in California. Farther south in Chile there is much rain and snow, as in Washington State, British Columbia, and Alaska.

The farmers of central and southern Chile get nearly all their money by selling food to the miners in the desert to the north, where many thousands of people live in villages as dry and foodless as in Chico's village of Salar.

During the World War this desert was one of the busiest places in all the world; for the nitrate of soda, which is found in the salt there, was used to make gunpowder, dynamite, bombs, and torpedoes. Many people

from southern Chile moved up into the desert to work in the nitrate plants. Hundreds of ships went to Antofagasta and Iquique, got nitrate, and took it to England, France and the United States. Ships carried nitrate from Chile, while wheat waited in Australia, although people were going hungry at the time.

299. Increasing our food supply.—Now that the war is over, we are using the dynamite to blast rocks in mines, quarries,



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Fig. 304. A farming scene in southern Chile. Find on the rainfall map of South America (Fig. 293) where such a picture might have been taken.

and roads. Many chemical factories use nitrate to make things which we find in the drug store, and the farmers also use it as fertilizer to feed the crops. Shiploads of nitrate go to many ports in the United States where there are fertilizer factories. You remember that the cotton growers in our Southern States use a great deal of fertilizer. Nitrate of soda looks like very coarse salt. If you want to see cabbage or lettuce grow rapidly, scatter a thimblefull of nitrate on the damp ground over the roots of the plant. Be careful that it does not touch the stem or leaves. The use of nitrate as a fertilizer is one of the many ways by which educated men have recently learned how to make the earth give us much more food. If we are willing to work and can live at peace, there is no reason why anyone should go hungry.

QUESTIONS

1. Copy the following sentences, filling out the blanks.

Going from southern to northern Chile, I pass from a land of — rain to a land of — rain.

Traveling from Lower California to Alaska, I go from a land of — rain to a land of — rain.

The miner in — Chile depends on his neighbor in — Chile for food.

The nitrate for —, —, and — is shipped through the Panama Canal.

2. Write a story with this title: "Chico's father works in Chile to make my father's garden grow." Make it interesting.

3. What do the wet lands across the sea send to Antofagasta? 4. Do you get your water supply from a well, a spring, or a city water system? Where does it come from before you get it?

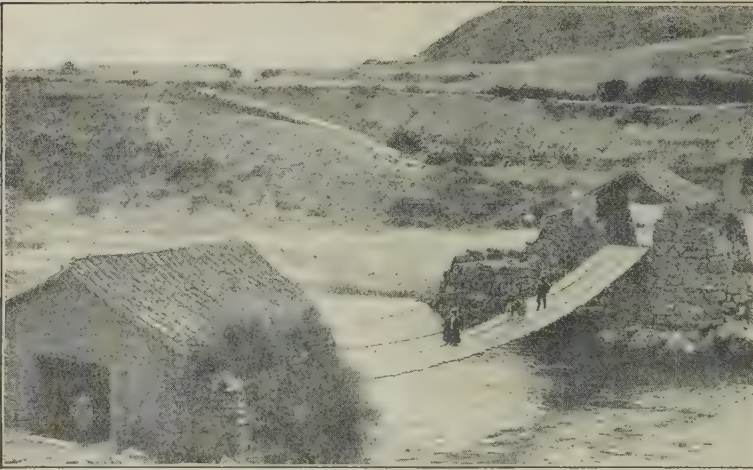


Fig. 305. On the Peru Central Railroad. The railroads have great difficulty in finding passes through the Andes. Tunnels are often necessary. How many tunnel entrances can you find? Near the stream there is a switchback, by which a train may zigzag up or down the mountainside.

THE ANDEAN COUNTRIES

300. An ancient civilization.—The four Andean countries lying south of the equator have varied surface and climate. They are long enough to reach from the Panama Canal to Alaska, so there is room for many things. They have plateaus, high mountains, rich mines, deserts, and low, hot, swampy forests. But they do not have any wide, rich plain like that of Argentina, Illinois, or Iowa.

When the Spaniards came to this part of South America they found the Indians living very much as the people in Europe lived. On the cool plateau of Bolivia and Peru the dark-skinned natives had good farms. They grew potatoes, which the Spaniards had never seen before. They also had flocks of vicunas and llamas. These wool-bearing animals, which the Spaniards had never seen, are somewhat like sheep. They ran wild on the Andes Mountains before being tamed by the natives. For a long time the llama had



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Fig. 306. This crude bridge in Peru is the same kind that the ancient Incas built. How does it differ from the bridges about your home? Would such bridges carry our automobiles?

been the only work animal in these countries, and is still used to carry packs and to carry ore from the distant mines. He is a cheap animal to keep, because he picks his food from the wayside as he goes along with his burden on his back. (Fig. 311.)

The ancient people of the Andean Countries made cloth of the llama wool. They had good stone roads, too, which men can still follow for hundreds of miles across the plateau and along the mountain sides. We can still find the ruins of cities there, and large stone buildings partly destroyed. The walls show that the men who made them could move enormous blocks of stone and build splendid walls. These wonderful people had great quantities of gold and silver, and you remember what trouble it caused them.

301. Peru and Bolivia.—Most of the people of Peru and Bolivia are still Indians or half-breeds, only one-seventh being of the Spanish race. White men from England and from the United States have helped them to build railroads up the Andes to the mines on the plateau. One of these railroads runs higher up than any

mountain in the United States. It carries ores of copper, silver, and gold from the mines of Peru. From Bolivia we get tin.

These miners and farmers on the plateau have two kinds of trade. The railroads bring them from the west all kinds of things that come from the factories of Europe. On the east side of the plateau there are no railroads; but trains of pack mules climb up the hard trails, carrying bananas, sweet potatoes, coffee, and

other products that grow in the warm lands, and are wanted by the people on the cold plateau. The pack mules carry back cloth and other European goods for the people east of the Andes.

302. Ecuador.—The physical map shows that Ecuador lies partly in the Andean



© Publishers' Photo Service

Fig. 307. The people who now live in this town still grow wheat on the little terraces which were built so many, many years ago by the Incas. Peru.



© Publishers' Photo Service

Fig. 308. The city of La Paz, Bolivia. Mt. Illimani, in the distance, is over 21,000 feet high. Find it in Fig. 279. Compare it with Mt. Misti, Fig. 277.

Plateau and partly in a low plain on each side of the plateau. The name Ecuador means "Equator", and the country is called by that name because the equator passes directly through it. The capital city, Quito, is almost exactly on the equator. Quito is far up on the plateau, 350 miles from the port of Guayaquil. Like Bogota, Quito is a hard place to reach, for it is ten thousand feet above the sea. But this gives it a delightful climate. All of the year it is like the pleasant days of spring. Wonderful volcanoes and other beautiful mountains can be seen from Quito.

The people on the plateau of Central Ecuador are farmers who keep cattle and sheep, and who grow corn, beans, and wheat on soil that is very rich, because it was blown out by the volcanoes and fell as dust in the mountain valleys that lie between the ranges of the Andes.

You remember that steamers from New York go up the Amazon into the low plain of eastern Ecuador where the rubber gatherers live. (Sec. 269.)

A great deal of rain falls at the equator.

In low plains along the equator there is a thunderstorm every afternoon for several weeks at a time. Instead of saying, "I will meet you at four o'clock to-morrow," men say, "I will meet you after the rain," or "before the rain." Between showers it is hot and damp, and there is very little wind. These conditions make the plain around Guayaquil very hot and wet, with no cooling breezes.

303. Chocolate.—Such hot, humid places suit the cacao tree. The chocolate that we all like is made by grinding up the seeds of the cacao. Every girl and boy who eats chocolate candy has probably had something from Ecuador. These seeds, called beans, grow in a big pod somewhat like a cantaloupe.

For a long time, Ecuador exported more cacao beans than any other country, but there is much cacao land in the rainy zone along the equator, and now there is more cacao grown in Brazil (Amazon Valley) than in Ecuador. The greatest cacao region in the world is the coast of Guinea in West Africa, where negro slaves still work on the chocolate plantations.



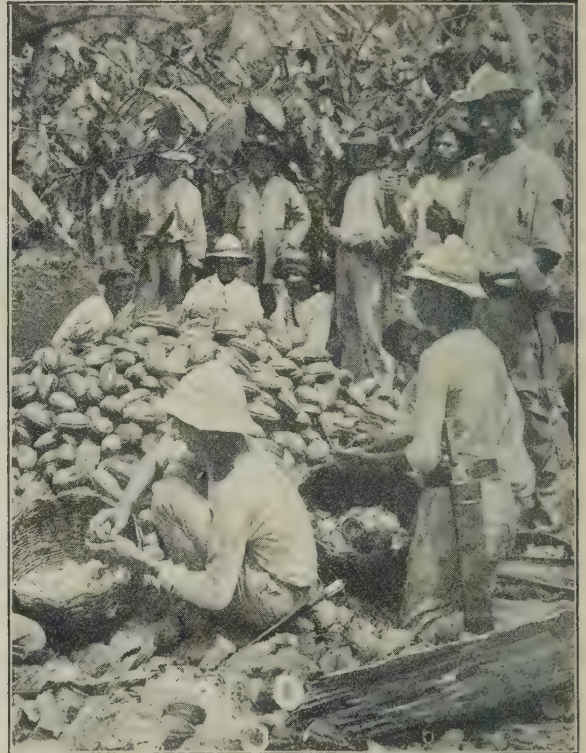
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Fig. 309. A cacao tree in Ecuador. You can see that each pod would make a handful. Why cannot this tree be grown where the wind is strong?

The cacao beans go to many chocolate factories in England, Holland, Switzerland, Germany, and Spain, for the people in all those countries are as fond of chocolate as we in America are.

The plain along the west coast of South America has many kinds of climate. In Ecuador, it is covered by the jungle, in which the cacao trees grow if men will cut the other trees away. In Peru and north Chile, the winds bring scarcely any moisture from the Pacific Ocean; and the mountains are so high that very little moisture can get over them from the east. This makes the coast a glaring white desert, as we have seen. (Sec. 297.) (Fig. 303.)

In the south of Chile the wind blows from the ocean over the high Andes, so the



© Publishers' Photo Service

Fig. 310. The pods, or fruit, of the cacao tree are much like cantaloupes, but the seeds are much larger than cantaloupe seeds. They are called coco beans.

mountain sides are dripping wet, green with forests below, and white with snow above, very much as on the coast of Alaska.

304. Peru and Chile.—In central Peru some streams come down from the Andes, and the people use the water for irrigation. Some of it is led into sugar plantations, and the sugar is sent to the United States and to England. In some places in north Chile, it is so dry that drinking water is hard to get. Here, where Chico and the nitrate workers live, are copper mines. Copper is the second export of Chile, but nitrate of soda is much more important.

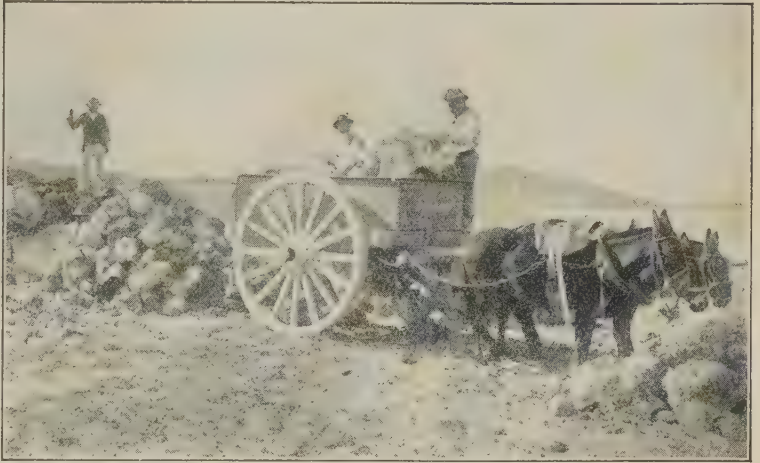
At Santiago we come to the good farming country, which is like central California. Here the west winds bring rain from the sea; therefore it is dry on the eastern side of the mountains. In the southern third

of Chile, the shores and islands, like those of South Alaska, are so rocky that there is little space for men to live.

Chile is a very narrow country, lying between the top of the Andes and the ocean. How far would it reach if we laid it east and west with one end at New York City? How far north would it reach if one end were placed at the lower end of Lower California? Of Florida?

Chile is about as large as California and Oregon together. Most of its people are of the Spanish race. They are industrious, and call themselves the Yankees of South America. Santiago, the capital, is a larger city than Washington, D. C., and is connected with Buenos Aires by the only railroad that crosses the Andes.

On the Strait of Magellan is Punta Arenas, the most southerly town in the world.



Courtesy of Philadelphia Commercial Museum

Fig. 312. Loading a nitrate cart at the nitrate beds in Chile.

QUESTIONS

1. How does the horse help the prospector in Colorado? (Fig. 123.) What do the mules in Colombia carry down the mountain? the llamas in Peru? Notice llamas feeding along the path. (Fig. 311.) Is their food abundant? Will they travel quickly? For what sort of weather is the driver prepared? 2. Describe a llama. Have you ever seen one in the zoo or circus? Why can he climb?

GENERAL QUESTIONS

1. Which part of South America has a very warm climate? Which has a climate much like ours? 2. Describe the great varieties of climate in Ecuador or another Andean country. 3. Name the largest country of South America, its chief products, the cities that ship them. 4. Name three big rivers of South America. Why are they of such great use?

5. Name the La Plata countries. Which one is the most like the United States? Name its products. Why is its capital the greatest city in South America? 6. List the independent countries of South America. Spell correctly. Which two have the highest mountains? Which is the narrowest? Which have frost country? Which two have no seacoast? 7. Name the island north of Venezuela owned by Great Britain. What group of islands east of the Strait of Magellan does she own?

8. Compare the coco industry of Ecuador with that industry elsewhere. 9. Why has the Panama Canal increased trade between the United States and South America? 10. Why has South America a smaller population than North America?



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Fig. 311. Llamas carrying their loads of ore from the Andes, picking their living as they go. The driver sticks his head through a hole in the blanket instead of wearing a coat. Bolivia.



Fig. 313. The Eiffel Tower in Paris, 984 feet high, the tallest structure in the world. Elevators carry passengers to the top to see the wonderful view of the city and surrounding country. The tower is used as a transatlantic wireless station, and by scientists in observing air currents and weather.

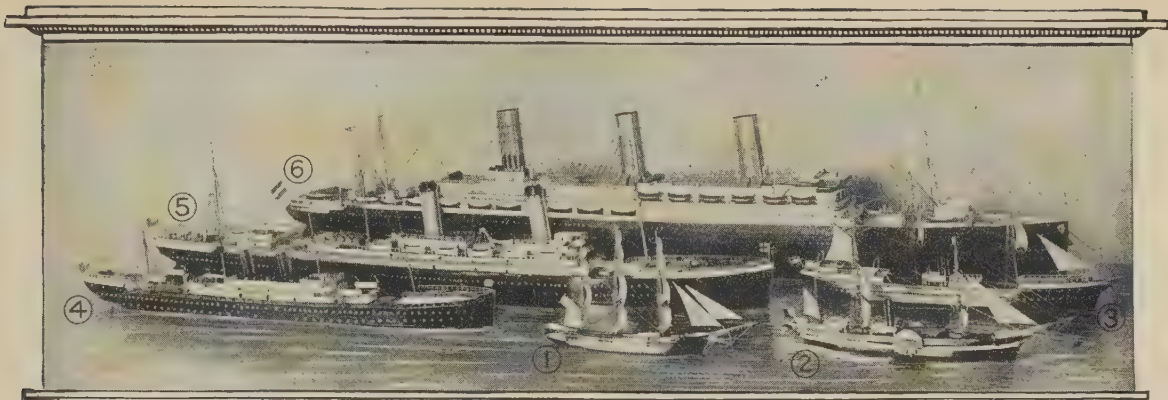


Photo. Brown Bros., N. Y.

Fig. 314. Europe has more ships than any other continent. This picture shows how ocean ships have changed in a little over a hundred years. (1) A square-rigger, the only type of ship in 1800. (2) An early type of combined sail and steamboat—about 1820. (3) A modern coastwise freighter. (4) and (5) A small and a medium-sized modern ocean liner. (6) One of the largest of the modern liners. See the masts for the wireless apparatus on (4), (5) and (6).

EUROPE

THE SHIPS AND SHIPBUILDERS OF EUROPE

305. A continent of many countries.—Europe is not a hot land like most of South America, but a land having frost like the United States. It was from this good continent of Europe that the many kinds of white people came who settled in North America. People still come from Europe to America to live. Such people are now called immigrants.

Europe has more countries than either South America or North America. Altogether there are more than twenty countries in Europe, and the people there speak more than twenty languages. In some countries there are two or three kinds of people, each having a different language.

The people of many European countries have helped to build up the United States; but Great Britain has done more than any other country, for it is from her that we get our English language and the kind of government in which the people pick out law-makers by voting for them. People

still speak of England as the “Mother Country” of the United States, although we have been an independent nation for nearly a century and a half.

306. The shipyard.—Look at the globe or at the map of the world (Fig. 40) and compare the size of the United States with that of the British Isles. You can easily understand that when many people live close together on such small islands they need to build and to have many ships.

Mary McGregor is a shipbuilder’s daughter. She lives in a little stone house in Scotland, near the city of Glasgow, on the bank of the river Clyde. The Clyde is not a big stream like the Hudson or the Delaware. Once horses used to wade across it near Glasgow. But now at that same place men have dug out the dirt and blasted away the rocks, making the water deep enough for ocean steamers to come up to the city. At many other places along the coast the people of Great Britain have



Courtesy of The Manchester Ship Canal Co.

Fig. 316. An ocean vessel in the ship canal at Manchester, England, unloading her cargo. The goods go into canal boats, freight cars, and the first, second, and third stories of the warehouse.

done much digging and blasting to make channels deep enough to float big ships.

From the door of her home, Mary McGregor looks across the Clyde into a shipyard, where she can see the row of long ways (slides) on which ships are built. She sees ships grow, day by day, as her father and other men, with noisy hammers, rivet piece after piece of steel to the growing ships. When a ship at last is finished, many people come to see it launched. To launch a ship the props are loosened, letting the great heavy mass of steel slide into the water where it bobs lightly up and down. A puffing little tug boat pulls it up to a long wharf. There it is tied fast, and for many days and weeks men are busy putting in the engines and machinery that will make this great iron house swim across the sea and carry men's burdens.

The many parts of a steel ship are made in different buildings of the yard. In one the great plates for the boilers are riveted

together with red-hot rivets; in another, the engines are built; in another, the great outer plates of steel are made and rivet holes punched along the edges. On the ways, these sheets are riveted together over the steel framework which has come from its separate building. Many machines and many workmen are needed to make the parts of ships and to put them together.

The coal used in melting the ore was dug from a deep mine a few miles away, for south Scotland has one of the many coal fields to be found in this lucky Island of Britain.

307. Other ship-building cities.—The United Kingdom of Great Britain and Ireland owns more ships and builds more ships than any other country in the world. There are shipyards in many British cities, particularly on the river Clyde near Glasgow, on the river Tyne, near Newcastle, and at Belfast in Ireland. The Danes build ships at Copenhagen; the Norwegians build them at Christiania; the Dutch at Rotterdam; the Italians at Genoa; the Germans at Hamburg and Stettin.

QUESTIONS

1. Walk toward Europe.
2. What people that you know used to live there? Locate the countries in which they lived. What route did they probably take to reach America? From what port did they sail? Where did they land?
3. Is the coast line of Europe more regular than that of North America?
4. Draw an outline map of Europe. Name the largest peninsulas, seas, gulfs, and bays, the highest mountains, and the greatest plain.
5. Name some languages of Europe.
6. Would we be more or less friendly with Canada if we

had a different language? Why? 7. Compare the number of countries in Europe and in North America; in Europe and South America. Which of the continents that you have studied has the fewest countries? 8. How are the Clyde and the Delaware Rivers alike?

9. Find Glasgow (Fig. 321) and Philadelphia (Fig. 198). What is alike in their location? in manufactures? 10. Of what material were Columbus' ships made? Why are steel ships better than his? What drove his ships forward? What two kinds of fuel drive steel ships forward? 11. Write an interesting paragraph about "Shipbuilding on the Clyde River."

THE BRITISH ISLES

308. An island kingdom.—The people of England call their country a "Right little, tight little island." It is a fine country, rich in things useful to man. The island, Great Britain, has three political divisions, England, Scotland, and Wales. The island, Ireland, has two political divisions, Northern Ireland and the Irish Free State. Formerly these two islands were called the United Kingdom of Great Britain and Ireland.

All together, both of these larger islands and the several islands near them are not as large as California. But fifteen times as many people live there. This is because the British Isles are good from end



© Wm. H. Rau, Philadelphia

Fig. 318. The castle overlooking the town of Arundel, England. Many castles are still found in Europe, most of them in ruins. Why does the castle have such narrow windows, and why are there notches in the top of the wall?

to end, and have in them so many things that people need for making a living.

309. Climate.—The climate of these isles is fine for men. The west wind from the Atlantic blows most of the time and gives a mild winter and a cool summer. This happens because the water of the ocean

does not become hot in summer or so cold in winter as the land does. Enough rain falls to keep the British fields green, the pastures growing, and the country beautiful. The English people love to have their homes in the country. Even the King is proud of his farm and of his fine cattle. There are more British breeds of sheep and horses and cattle than any other three countries of the world. People have bought them and taken



Photo, Chas. Zoller, Rochester, N. Y.

Fig. 317. Most farmhouses of the British Isles have thatched roofs. What signs of a moist climate do you see in this picture? How many kinds of roofing can you name? Which is cheapest?



Photo. J. Russell Smith

Fig. 319. A British farmer with his dog driving some lambs to market. The yards and gardens are commonly inclosed by a wall.

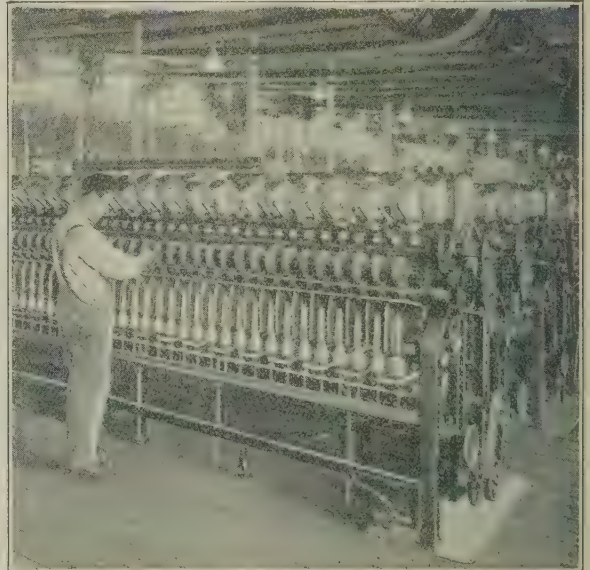
them to every continent, because they are the best animals to be had anywhere.

310. Agriculture.—Most of the land in Wales, in northwest England, and in the highlands of Scotland is hilly. Every day or two the land is wet by rains and mists. In so moist a climate plenty of grass will grow for pasture; therefore this is a great sheep and cattle country. For hundreds of years the herdsmen and the farmers of Scotland and Wales made their living by selling meat, wool, and milk. Southeastern England is a plain. It has less rain than west England and so is a better country for general farming. Here farmers grow wheat, barley, oats, potatoes, and vegetables. To make room for pastures and fields nearly all the British forests have been cut down, and no lumber is left. Almost every board used in Britain comes there in a ship from some other country.

311. Harbors, trade, and shipping.—The many good harbors in the British Isles protect ships, and make it easy to fish in the sea, and to sail to other countries for trade. There are more good harbors on any one side of Great Britain than on the whole west coast of South America. Every year

thousands of ships from every continent go to the British cities such as Liverpool, Glasgow, and London. London, on the river Thames, even though fifty miles inland from the seacoast, sends ships to more places than does any other city in the world. To let the many ships in and out, the river Thames had to be dug deeper, and when the ships filled the river for miles, places for great docks were dug out of the dry land. The city now stands all around these docks, and a second basin has been dug several miles below the city.

312. Manufacturing cities.—All parts of the British Isles are close to the sea, but some of her big cities are inland, near the coal mines, which supply the fuel for factory engines. The cities of Birmingham and Sheffield make iron articles; Manchester (Sec. 185) is famous, you remember, as the great center for cotton cloth; at Leeds and towns near it, woolen cloth is made. From these four cities British ships carry machinery and material



Courtesy of American Woolen Co.

Fig. 320. An English spinning factory where woolen yarn is spun. Compare these spindles with the spinning machines shown in Fig. 183.



Fig. 321.



Photo. Publishers' Photo Service

Fig. 322. Bridge across the Shannon River at Limerick. How many kinds of buildings can you pick out?

for clothing to every country in the world. And the same ships bring back from other lands all the raw cotton used in Great Britain, as well as the sugar, lumber, copper, and oil, most of the wool, and much of the wheat, meat, and fruit. See how useful her ships are to Great Britain. They are kept very busy carrying away the things the kingdom makes, and bringing back other kinds of things that her people need for food and for manufacturing their exports.

London is the greatest manufacturing city of all, with thousands of factories where hundreds of thousands of people work.

The map shows you that the British ports are in pairs,—in the south, London and Cardiff; in the center, Liverpool and Hull; in the north, Glasgow and Edinburgh. The fast vessels that go up the English Channel to France, Belgium, Holland, and Germany stop at Southampton in passing.

313. Minerals.—Best of all, Great Britain has many good coal fields, and near them are many iron mines. The presence of coal and iron together gave England the best machines and the best cloth in the world. Great Britain was the first country

to have factories where steam engines drove weaving and spinning and other machines made of iron and steel and wood. She also was the first country to make iron ships to carry her things to be sold in other countries. Thus England became a great trading country. As people who had factories made money, other factories were built, and of course, to make homes for the workers, cities grew up around the factories, until now about three-fourths of the people of England live in cities and towns.

314. Sports.—In the English factory towns Saturday is a half holiday and many football games are played. Sometimes as many as a hundred thousand people go on Saturday afternoon to watch the football game between the teams from rival towns, for the English are very fond of football, cricket, walking, and other outdoor pleasures. The English weather is so much cooler in summer and warmer in winter



Fig. 323. Map of the British Isles showing where coal is found.



Photo. Brown Brothers

Fig. 324. Cricket is the great game in England.

than is the weather of New England and the North Central States, that the English people play football nearly all the year.

Instead of the baseball which we play so much in America, English school boys play cricket, a game somewhat like baseball.

315. Scotland and Wales.—A long time ago these countries were independent. Their language is still a little different from that of the English, but they all read English. The Welsh once took an English prince to be their king and thus joined England. The English asked the King of Scotland to become their king. He did this and united the two countries. We have already seen (Sec. 309) that both are hilly, damp countries. They both have a scanty population except in the lowlands where there is coal. The Scotch coal is near Glasgow, which is a great manufacturing city. The Welsh coal mines are near Cardiff, a port that sends shiploads of coal to France, Italy, Brazil, Egypt, and many other countries. The Scotch have for centuries spun their clothes in plaids peculiar to their own country, and often use bright and beautiful colors. (Fig. 326.) The simpler plaids are used by the shepherds watching their flocks on the beautiful hills of Scotland, and the great old families have each their own separate plaids called after their names, but which have been used and enjoyed by other people around the world. Scotch people may now be found in almost every country in the world.

316. Ireland.—Ireland is swept by so many damp winds from the Atlantic, bringing clouds and showers, that it is one of the greenest islands in the world. For this reason it is called the Emerald Isle. The climate is too damp for wheat to grow well; so most of the farmers grow oats and potatoes, and keep cows and pigs. They send eggs, butter, and meat to English factory towns. Irish bacon is thought to be so fine that some of it is even brought to the United States.

Ireland does not have coal, except as it comes in ships from England; so her factories have not grown like the factories of Scotland and England. Her chief cities are Dublin and Belfast, which you see are close to England. Some of the largest ships in the world have been built in Belfast. The people of Ireland once raised flax, a plant about two feet high and having tough, strong fibers in the stalk. From these fibers people spin thread to make a fine, strong cloth called linen. For a long time, the Irish wove fine linen by hand, in their own homes. Now it is made in factories at Belfast, Dublin, and in other parts of Ireland. Before the World War most of the flax used for weaving came



Photo. Brown Brothers

Fig. 325. A Saturday afternoon soccer football match. Birmingham, England.



Photo. Williams, Brown & Earle

Fig. 326. Scotch Highlanders. One is dancing the famous sword dance to bagpipe music. See the mountains, which are common in Scotland.

from Russia and Poland, near the Baltic Sea.

The Irish people have a very great sense of humor, and make many jokes. Many Irish people have come to America and taken an active part in our politics and government.

317. The British Empire and its capital.—The British Empire includes other lands and islands beside those of the British Isles. These are called dominions and colonies and they are over eighty times as big as is the entire British Isles. In these lands are more than twice as many people

as may be found in all of North and South America together.

London is the capital of Great Britain and the British Empire as well. For a long time it was the largest city in the world. Now New York is larger. People from many lands go there to see its buildings and other interesting sights. Often in London one may see sunburned Englishmen who have come back from Canada, South Africa, Australia, or some other British possession to visit the mother country. Sometimes one sees tall, dark, handsome Hindus, with turbans and big beards and native costumes. They have come from India to see the King. Black men come from British colonies in Africa; brown men from British colonies in the East Indies; Chinese from the British colony of Singapore. (Fig. 444.) Perhaps some of the visitors have business in London, for here are the offices of hundreds of companies that own and manage plantations, mines, railroads, and factories in many of the foreign countries, where

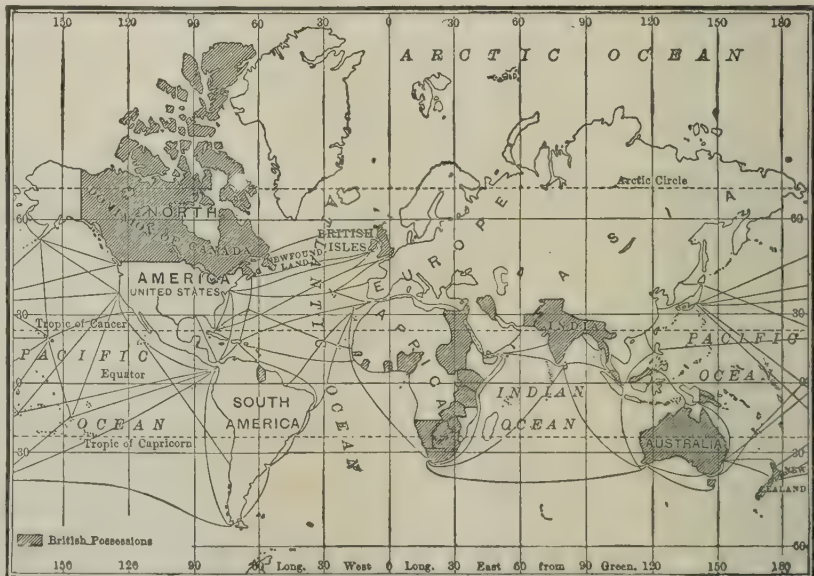


Fig. 327. Map showing the extent of the British Empire. For names of these and many smaller possessions, see the political map of the world, Fig. 40.

British traders and travelers have set up business.

318. Government.—England has a king, but the laws of the Empire are made by a Parliament, a body similar to our Congress. By electing members of Parliament the people rule. The King receives distinguished visitors from foreign countries, makes speeches, attends many meetings and receptions, lays the corner stones of new buildings, and has many other duties.

QUESTIONS

1. What two large islands with many small ones form the British Isles? 2. What are the people from each part of Great Britain called? Of Ireland? 3. Compare the islands with one of our larger states in area and population. 4. Why does this small country build and own more ships than any other country of the world? 5. Why is it also one of the greatest manufacturing countries? Name the three manufactures for which it is most noted; the cities chiefly famous for them.

6. Why do three-fourths of the people of England live in cities? 7. In Portland, Oregon, would you be able to play football all winter as English boys do? Would you in Montreal? 8. Name some things we produce that are not produced in Great Britain. How does this influence trade? 9. What does Australia buy from England in exchange for wool?

10. Why is Ireland wetter than the east coast of England? What difference is there in the crops of Ireland and England? 11. Name three ways in which the chilled beef is distributed through England. 12. Compare the traveling cranes (Fig. 316) with the banana conveyor at New Orleans and coffee loading at Santos. (Fig. 286.)

GROWING SUGAR BEETS AND RABBITS IN FRANCE

319. A French farm village.—Jean Ribot is a French boy, fourteen years of age, who lives in a village near the Belgian boundary. His house is on the road from Calais, France, to Brussels, Belgium. In the village in which he lives there are only thirty houses. Two miles away across the



Courtesy of Robert H. Moulton

Fig. 328. A field of sugar beets. How many different uses are made of these beets?

level plain is another little village. Jean can see its church steeple from the village where he lives. On the level plain between the villages there is not a tree or a fence, but only the many little fields cultivated by the farmers who have their homes in the villages and who go back there when the day's work in the fields is done.

In France, as in nearly all parts of Europe, the farmers live in villages, with their houses and barns close together, and they have their farms on the land surrounding the villages. Jean's father, Pierre, is a farmer. His fifteen acres of land are a mile away from the village. He has two horses and three cows. He does not need two horses on his fifteen acres all the time, so he does the plowing for his neighbor,

who has only five acres and no horses at all. He helps Pierre in return.

320. The French farm.—There are five fields in Pierre's farm. In one he grows clover; in others, oats, wheat and potatoes; and in the last one of all he grows sugar beets. Each field grows a different crop each year. This is called rotation of crops. The horses and cows eat all of the clover and oats. Some of the wheat will be sold; some of it will be taken to the miller at the end of the village near the church. The miller will keep one-sixth of it for grinding it into flour. Three acres planted with potatoes will, if the weather is good, produce six hundred bushels, nearly all of which will be sold.

Tending the sugar beets is the biggest task of all on the little farm. Pierre covers the field with manure, which he hauls out from the barn in the village. Then he plows the earth deeply and harrows it over and over again until it is almost as soft and fine as meal. Jean and his mother, and Susanne, his sister, drop the seeds into the long, straight furrows that Pierre makes with the plow. This is very particular work, for the seeds must not be planted too thickly or too scantily. When the beet seeds have sprouted, thousands of little weed seeds have sprouted, too; and the entire family must spend days, on hands and knees, picking out the little weeds and

thinning out the beet plants with their fingers, for no machine can do this work. They take dinner along with them and stay all day in the field, the baby sleeping in the wagon most of the time. Several families eat lunch together and have a sociable time.

One day as Jean eats his sandwiches, he counts twenty-five wagons standing about.

They belong to people from three different villages who grow their beets on this well tilled and densely peopled plain.

321. The rabbits.

—At evening the families get into their wagons and ride back to the village where they live. The Ribots take home a big basketful of the weeds and little beet plants for the rabbits to eat.

Jean and Susanne have some rabbit

hutches in the shed against the side of the barn. Rabbits can live in small boxes or hutches. Jean and Susanne have four mother hares (big tame rabbits), each of which raised three families of children last year—fifty rabbits in all. Each rabbit weighed four pounds when it was sold. How many pounds would that be for all? Jean and Susanne had a snug sum of money, for they received twenty-five cents a pound for their rabbits. But that was all the money they had for a whole year; and they saved most of that, for every boy and girl in France is expected to have a



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Fig. 329. A wagonload, carloads, and bins full of beets at a sugar factory. What states in the United States grow beets for sugar?



Courtesy of World Agriculture, Amherst, Mass.

Fig. 330. A small French town. See the farmer's dwelling and farm buildings in the foreground. The house, barn, and other buildings often surround a yard.

bank account while still a child in school. In the summer time the rabbits are fed on weeds from the garden, and grass, and on beet tops from the field, but in the winter the bunnies eat potato parings and the same kind of grain and hay that is fed to the horses and cows.

There are rabbit hutches in nearly every back yard in the village, and in the next village, and in the next. Thousands of people in France and Belgium raise rabbits to eat and to sell, and thousands of tons are shipped across the English Channel every year. There they are bought and eaten by the people who work in the factories of England and Scotland.

The whole Ribot family is busy all summer in the fields. With the horses, Pierre cultivates the beets and potatoes. His wife and the children hoe them and pull out the weeds from between the plants. They all work together cutting the wheat, oats,



Courtesy of World Agriculture, Amherst, Mass.

Fig. 331. The way the country looks between villages in France. The road is a first-class, hard, smooth one made of limestone.

and hay, and hauling them to the barn in the village.

322. Life in the village.—When the people come back from the fields in the evening, Jean leads the horses out to the town pump to drink, while Susanne helps her mother to get supper, and carries buckets of water from the pump to the house. There is only one well in all the village. Each family must send there for water, and often the children play a game of tag around the pump before starting back home. Jean and his father feed the horses and milk the cows. Twice a week the mother makes delicious sweet butter by

churning the cream in a hand churn. Some French butter goes to England. The English people are very fond of bread and butter and jam, and they buy butter from the farmers of France, Holland, Belgium, Denmark, and even of western Siberia, a country away to the east of Russia, beyond the Ural Mountains.

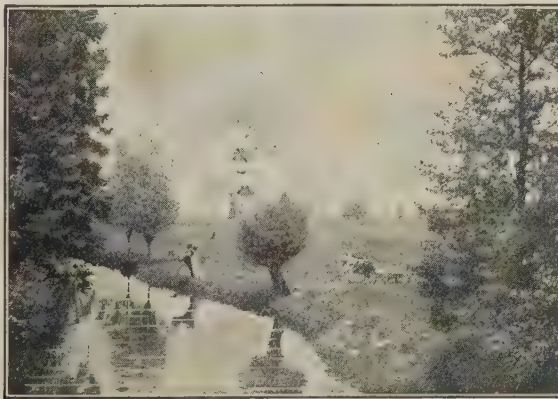


Photo. G. E. Finch, Dillon, Mont.

Fig. 332. A French pasture near Lemans. The round-headed willow tree is ready to cut for basket material. At the left, see the stump of a similar tree after yearly cutting, or pollarding.



Photo. U. S. Signal Corps

Fig. 333. Three American soldiers watching a French farmer threshing his grain by hand with the flail. Compare Fig. 86. The white stick near the man's arm will flop down on the grain.

323. The sugar harvest.—By September the Ribots have picked up all the potatoes and planted the potato field to wheat. Then they harvest the sugar beets. These big sweet roots are a foot long, and their green leafy tops stretch in long straight rows across the field, with narrow strips of brown earth showing between the rows. The tops are cut off and taken to the barn for the cows to eat in the winter time. The beets are pulled up and hauled, day after day, to the sugar factory in a town a few miles away. There they are washed clean and thrown into a slicing machine. This cuts them into little pieces, and the sugary juice is all soaked out in warm water. Some of the beets are so good that there is one pound of sugar for every five pounds of roots. In the big factory the water and juice are put through many vats, boilers, pipes, and pans. Finally the sugar comes out with exactly the same form and flavor as the sugar from sugar cane.

Many wagons are at the factory bringing beets. Pierre sees some friends he hasn't seen since he hauled beets the year before. He goes home in the evening with a load

of beet pulp, which the cows are glad to eat even if the sugar has been soaked out of it.

324. Beet sugar in other countries.—Sugar beets grow in many countries. Women, girls, and boys are working in fields of beets on thousands of farms in the level plains of France, Germany, Austria, Belgium, and Czechoslovakia. Some of the Polish and Russian farmers grow beets too, and they are also grown now in the United States. The beets like a cooler summer than corn does. Therefore we do not find them in our Corn Belt, but on the farms of Utah, New Mexico, Colorado, Idaho, and California. Beets are also grown in parts of Wisconsin and Michigan, to the north of the corn district. Many of the people who work in the American beet fields learned how to grow beets in Europe. Sugar is also made from sugar cane. (Secs. 248–255.) Possibly you may wish to read again about the Sugar Islands.

QUESTIONS

1. Tell the differences between the way a French farmer lives and the way our farmers live.
2. Which life would be less lonely, Jean's in France, or John's in America? Is it easier for Jean or John to go to school? to church? What advantage can you see in our way?
3. Is 600 bushels of potatoes from three acres a large or a small crop? Find out if a farm you know about produces more or less.
4. Why is it harder to harvest sugar beets than wheat?
5. What large crop plant in America provides fodder for animals and food for man?
6. Tell what Jean and Suzanne say to each other at the pump.
7. Do the children in your school save a part of the money they get?
8. How many different plants give us sugar? Name some places where each of those plants is grown. Get the map of the world and point out these places.
9. Which of these plants requires the most hard work?

FRANCE AND BELGIUM

325. France differs from England.—

France is a republic, having a president like the President of the United States, and an Assembly like our Congress. France is so close to England that on a clear day one can stand on the French shore at Calais on the Strait of Dover and see the shining white chalk cliffs of England, twenty miles away. Though near neighbors to England, the French people are not like the English people. France, which is larger than Great Britain, has fewer people, and more of them live in villages and small towns. She does not have so much coal, or so many factory towns, as England has. For this reason, France has less foreign trade than England, and must more nearly live on the things that she raises at home.

Most of the French people are farmers. Their country is good for farming, as most of it is lowland. There is plenty of rainfall, and the climate is neither too hot nor too cold. The largest highland, in the central part of the country, is not too high for some farming, and only in the eastern part do we find high mountains, the Juras. On the slopes of these mountains are splendid forests. There are forests in other parts of the country, too, for France grows most of the wood she uses, and she needs a great deal of it to keep her people warm in winter, since there is so little coal.

326. Forests and thrift.—France has large forests, which are carefully planted and watched. If the leaves on the ground catch fire, people hurry to put the fire out before it kills the trees. We must learn to do this in our own country, for wood is becoming scarce here, now that we have used so much and have had so many forest fires. In France almost nothing is wasted.



Photo, U. S. Signal Corps

Fig. 334. At French street markets you may buy young, live pigs, and almost anything else you ever thought of.

When the trees in the forests are large enough for lumber, they are cut down. Even the small branches and little twigs are tied up in bunches for kindling the fires in homes and village bakeshops.

In traveling through France anyone can easily see that the French are a thrifty people. There are few weeds on their farms, and the crops show that they have had good care. The horses are fat and well kept. There is good food in the clean little inns by the wayside, for the French are good cooks. The roads along which we go are well made and in good repair.

327. Small farms.—The farms in France are very small, as there is not room enough for everybody to have a large farm. The whole of France is in size about equal to Missouri, Kansas, and Nebraska; but it has seven times as many people as these three states. Each farm must be small, and its owner must cultivate it well to make it grow enough to provide a living for the family. So you see one of the reasons why the French and the other people of Europe are so thrifty. Most of the French farmers own the land they cultivate, and

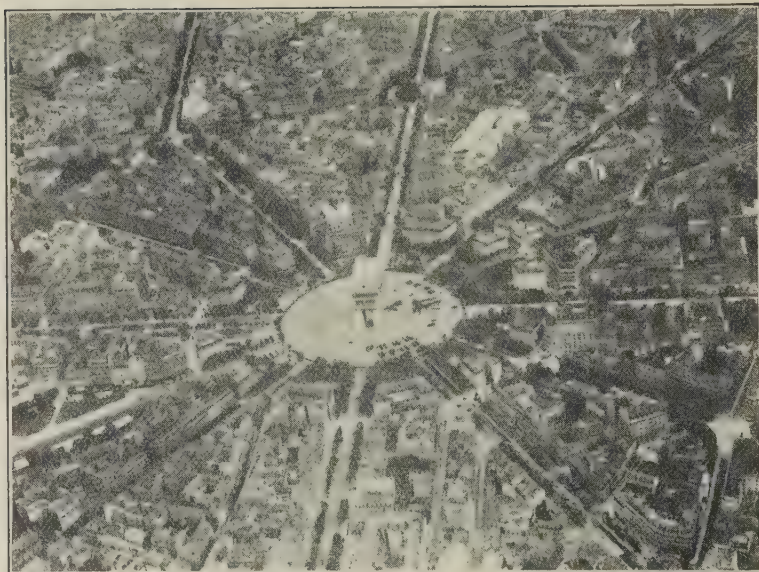


Photo. International Film Service

Fig. 335. An airman's view of the Palace of the Star, in Paris. The city has many such places where streets radiate in many directions.

they dearly love their homes and their country.

The five great crops of France are wheat, oats, potatoes, sugar beets, and grapes. The people eat more potatoes in that country than we do in the United States. Most of the grapes are grown in the warmer parts of France, where there are large vineyards. From the grapes, wine is made, which is sent to many countries. France is the first country in the world in wine making. In the winter the vines are trimmed and the trimmings tied up in bunches for fuel. In the summer some of the leafy branches are trimmed off and fed to the goats.

328. Roadside trees.—In some of the level farming country, far away from the mountains, the farmers plant willow trees along the streams and ditches. The long willow branches are cut off every year and made into baskets to carry produce to market. Often there are rows of walnut trees or fruit trees along the roadsides. These make a pleasant shade and furnish

nuts and fruits as well. France is a beautiful country. Its people call it "La Belle France," meaning "Beautiful France."

329. Silk.—In the south of France, some of the people in the villages raise mulberry trees. They cut off the leafy twigs and feed them to silkworms. From the cocoons which the silkworms spin, silk is made. In the city of Lyon and at St. Etienne, there are many big silk mills that make very fine silk cloth and ribbons. These silk goods from the Rhone Valley, together

with jewelry from Paris and wine from the farms, help France to pay for the coal, iron, cotton, wool, petroleum and food that she must buy from other countries.

330. Paris.—Nearly all the railroads and finest highways of France lead to Paris, the capital city. It is the third city of the world in size, and has beautiful buildings and wide, shady streets called boulevards. Automobiles run in every direction and omnibuses with people riding inside and on the roof go up and down the streets of the city. Travelers from every state in America, indeed, from almost every country in the world, may be seen on the streets of Paris. We may visit the famous buildings filled with wonderful paintings, and then go to the fine stores to buy presents for our friends at home. There are many beautiful things in Paris, for the French people are fond of pretty things, and know well how to make even commonplace things beautiful. The French are an artistic people. Because the French make such pretty things, Paris is a great producer and

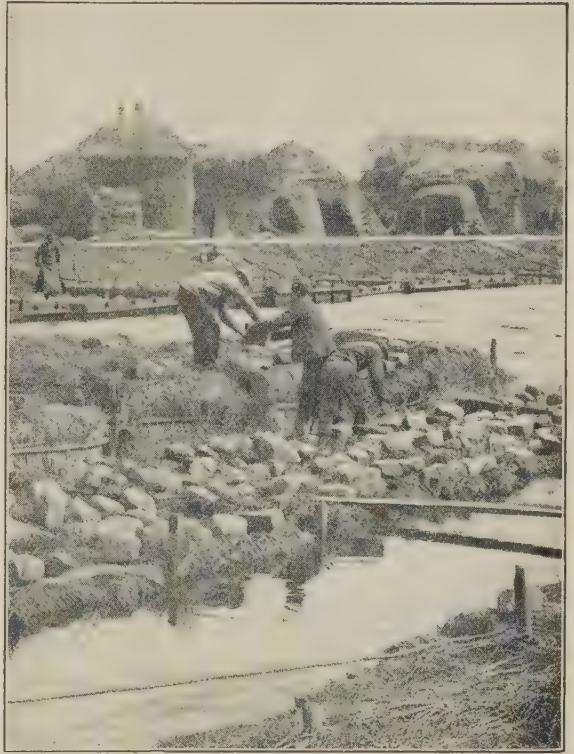
exporter of dresses, hats, gloves, silk and satin goods, jewelry, perfumes and many other fine goods that go to the stores in America. River boats bring freight from ocean steamers at Havre up the Seine River to Paris.

331. Seaports.—France has four great seaports. Brest, on the western corner, is the nearest to America, and hundreds of thousands of American soldiers landed there during the World War. Havre, on the north, is the port for Paris; Bordeaux, on the west, is the wine port; and Marseille, on the south, is the port for the trade with French possessions in Africa and in Asia. France is like England in having colonies that are larger than the mother country. See Fig. 40 to find the French colonies. Many coconuts and peanuts are brought to Marseille and crushed in the oil mills, for which the city is famous. Some of the French people eat the oil from these nuts in the place of butter.

332. Northern France and Belgium.—In the north of France, where Jean Ribot lives (Sec. 319), and in Belgium, which is very near by and very much like France, the farms are smaller than they are in the rest of France, and the population is very dense.



Fig. 336. A view on one of the beautiful boulevards of Paris. They are very wide, tree-lined streets, where people often walk, or stop and eat at the little tables in front of the cafés, or shop in the stores.



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Fig. 337. Peasants soaking flax stalks in the river Lys, Belgium, so that the long slender fibers can be removed. These make linen thread, which may be woven into linen cloth. How many different kinds of fiber do you know?

There is some coal in this part of France, and the same coal layers extend under Belgium and on into Germany. In northern France there are manufacturing towns such as we find in England. The largest of these French towns is Lille, where much wool and cotton cloth and linen are manufactured. Near the French border are several Belgian towns where glass, cement, and iron are made. Even in the time of Columbus, Belgium was famous for its manufactures of woolen and linen cloth, and these industries still thrive. Lace making is another of the famous industries of Belgium. The women of the country villages often use their spare time in making most beautiful lace by hand. It is sent to Brussels to be sold.



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Fig. 338. Each city and each town in France and Belgium has its street market, which is held in some open square. Often it is in front of the city hall. This scene is in Arras, northern France.

333. Trade through Belgium.—Antwerp, the big port of Belgium, lies up the river Scheldt, and has more vessels coming into it than has any port of France. From Antwerp, goods bound for France and Germany often go forward to those countries by canal boats. The same canal boats bring French and German exports to the ocean steamers at Antwerp. Many vessels daily cross from England to France and Belgium, for there is a lively trade between these countries.

Brussels, the capital of Belgium, is much like Paris, except that it is smaller. Belgium is about the size of Maryland. It is like England in having a king, and a Parliament that really rules.

334. Dense population.—With its small farms and many manufacturing towns, Belgium has twenty times as many people

per square mile as has the United States. No other country in Europe has so dense a population. The people cultivate their little farms almost like gardens, but they must buy much of the food they eat, and they must pay for it with manufactures. You can see why they suffered so when the World War stopped their trade, and why they would have starved if the Belgian Relief Committee had not brought them food through the Dutch port of Rotterdam.

The people of both France and Belgium are intelligent and well educated.

QUESTIONS

1. What two cities of the world are larger than Paris?
2. Name five great crops of France. Why did the United States send much wheat to France and Belgium during the World War?
3. Find Calais and Dover on the political map of Europe. What waters does the Strait of Dover connect?
4. Through what narrow body of water do the ships that go to London pass?
5. In which parts of France and Belgium are the chief lowlands?
6. Into what arms of the Atlantic do the three rivers of France which flow across the northern and western lowland empty? Name a large city on each river.
7. Do the railroads in your state lead to your capital? (Fig. 133.) Why should French railroads lead to Paris?
8. From the sections on France, find examples which show the French to be thrifty. Head them, "Examples of French Thrift."
9. What fiber plants besides flax have you learned about? List these plants



Courtesy of Robert M. Clark, U. S. N.

Fig. 339. This picture shows a few of the many canal boats that help make Antwerp, Belgium, one of the greatest seaports of the world.

opposite the country each grows in. In another column write something made from each.

10. How can Belgium support twenty times as many people per square mile as the United States? 11. Name its manufactures. What beautiful product is made by hand? 12. Name a French port on the Mediterranean Sea. What is manufactured there? What products of the Rhone Valley are shipped from there? 13. Name and locate the cities where the silk raised in this region is manufactured. 14. Why are Americans especially interested in the government of France? Locate and describe its capital.

HOLLAND AND GERMANY

335. Land below the level of the sea.—

Holland, or the Netherlands, as it calls itself, is like Belgium, a country having little land but many people. Except for a few poor mines, it has no coal except that which comes in ships from England and in river boats down the Rhine from Germany. For a long time the people of Holland have been cultivating all of their land. What work would a young man do in such a country? In Canada or the United States he might still go out west and find a farm waiting for him. It is different in Holland, where every foot of land is already used. To get a job, the young Dutchman must go to town, or go to sea, or go to some other country, as many of the Hollanders, or Dutchmen, have done. But there is one more thing he can do; he can help build sea walls to keep the water back so that the sea bottom may be drained and used for growing crops.

Holland is the only country in the world whose people have thus made a large part of their land for themselves. Much of Holland was once a big, shallow bay called the Zuyder Zee. For hundreds of years the Dutch have been diking off parts of it, pumping the water out and then making fields on the bottom of the bay, and they are still doing it. This is how it is done.



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Fig. 340. A road on top of a dike, Holland. The slope of the fence shows the height of the dike. Find the milk cart and the cows. The woman is knitting.

First, they build a big dike, or bank like a railroad bank, across a part of the bay. Sometimes they have to use stones from Norway and logs from Switzerland, for this part of Holland has neither stones nor forests. When the dike has been built, pumps are started, and by months of pumping the water is drawn out of the part of the bay behind the dike. Then the bottom can be used for farms. Finally, in order to keep the rain water from covering the land, windmills are built on the dike. Every time the wind blows, these mills pump and pump and pump, and thus keep the water below the surface of the meadows.

Now you see why this country is called the Netherlands, which means "Low-lands."

The bottom of the Zuyder Zee is part of the Rhine delta—soft, rich mud, washed down from Germany and the Alps. When reclaimed, it makes very excellent pasture. So many cows are kept here that butter and cheese are among the chief exports of

Holland. The Dutch cultivate each field like a garden, and everything is very neat and clean.

336. A country of canals.—Canals go in all directions across this level country, and people use them instead of roads. The farmer goes to market in his canal boat instead of in a wagon. In the winter, the people skate to town on the canals, and skating races are the chief winter sport.

Everyone who goes to Holland wants to take a ride on a canal boat. Let us get on board this one that is waiting. The canal goes across the country like a road or village street. We see on one side of it a foot-path and a row of houses with roofs of red tiles made of burned clay. Women take milk from door to door in carts pulled by big, strong, lead-colored dogs. Dog wagons are very common in this part of Europe. As the few roads are level, traveling is easy for dogs. Then, too, it costs less to keep a dog than to keep a horse.

A large, long-legged bird stands on a church roof. It is a stork, and that pile of rough sticks on the church steeple is her nest. Everybody in the village is pleased to have a stork's nest on the

roof because they think it is a sign of good luck.

Beside the canal some boys and girls, wearing wooden shoes, called sabots, play with toy boats that have sails and run before the wind. On the other side of the

canal is a field where black and white cows eat very green grass. Near by a windmill swings its arms as it turns the mill that grinds American corn into meal for these cows to eat. Our boat stops, and the village cheese maker puts on board a lot of round, red, Dutch Edam cheeses that are on their way to the United States.

337. Government and cities.—The government of The Netherlands is like that of Belgium. The capital is The Hague. Amsterdam is the largest city, and is famous for its work in diamonds. Nearly all the diamonds in the world are taken to Amster-

dam to be cut, for here are the most skilful diamond cutters in the world. These men can take what would look to us like rough pebbles, as they come from the mines of South Africa, and make of them brilliant, shining jewels.

Thousands of Dutchmen are busy catching fish in the North Sea. Others are



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Fig. 341. A canal street in Amsterdam.

sailors, trading with America and with the large Dutch colonies in the East Indies. Many are busy loading and unloading the goods which come to Amsterdam and Rotterdam, and which are to go by smaller boats on up the river Rhine into Germany and Switzerland.

The Dutch city of Rotterdam, on one of the mouths of the Rhine, is like Antwerp in having the trade of more than one country. Here are boats of many shapes and sizes, so close together that sometimes you can step from one boat to another. Big black ocean steamers have come loaded from Montreal, Galveston, Rio de Janeiro, and Buenos Aires, and from the north of Sweden. These ships are anchored in the middle of the stream. On one side of each boat men are unloading freight into the long river boats that go up the Rhine to Germany and Switzerland. From the other side of the ship, freight is being loaded into the short, stubby canal boats for less distant places in Holland and Belgium.

338. Germany.—East of France, Belgium, and Holland, is Germany, a country larger than England or France, and with

more people than either of them. Germany is made up of a number of states. Before the World War, many of the states were ruled by kings, princes, and dukes, while the whole country was ruled by an emperor called the Kaiser. There was also

a Parliament, which made some of the laws, but the Kaiser had much more power than the King of England or the President of France. At the end of the war, the Kaiser ran away to Holland, and Germany is now a republic.

The Germans are a very well-educated people. Nearly everybody in Germany can read and write, and there are fine universities and trade schools in many of the cities. These schools have taught the people how to do many things, such as to build ships and railroads, and to manufacture machines, chemicals, cloth, dyes, and fertilizers. Because the

people were so well-educated, Germany had built up an enormous foreign trade before the World War.

339. North Germany.—The larger part of Germany is in the great, low, central plain of Europe. For miles and miles one can see only the same level plain. No



Chas. C. Zoller, Rochester, N. Y.

Fig. 342. Would you enjoy wearing the clumsy, wooden shoes that these Dutch girls wear?



Photo. Brown Bros., N. Y.

Fig. 343. The Dutch think a stork's nest on a house-top brings good luck. People who kill storks are punished. The Dutch storks winter in Africa.

natural boundaries, such as mountains or rivers, divide the land of Germany from the land of Holland. Instead there are rows of boundary stones, as there are also between Holland and Belgium, and between Belgium and France. Much of the German plain has sandy soil, which is not very fertile. By skilful farming and the use of fertilizers, however, the Germans have made it rich, and can raise rye, wheat, sugar beets, and potatoes for men, and barley, oats, and hay for animals. One might walk for many days and see only this flat, sandy plain, dotted with villages, from which men and women, boys and girls, go out to work in the surrounding fields.

The chief foods of the poorer people are potatoes and black rye bread. No other people use so many potatoes as the Ger-

mans. Potato flour is used, together with wheat flour and rye flour, to make bread. Dry potatoes are fed to the pigs and cows. Alcohol that is made from potatoes is sometimes used to run automobiles.

340. Central Germany has low mountains, something like the Appalachian Mountains of Pennsylvania. They are often covered with forests, which, like those of France, are well cared for. Forests cover one-fourth of the German land. The people who live in the German hill country often have little farms in the valleys, on which they work in summer, and then make wood-carvings and toys in winter.

South of the Central Highlands is the upper Danube Valley (Sec. 357) with its farm lands, forests, and mountain pastures.

341. The Rhine Valley.—The physical map shows that the Rhine valley runs right through the highlands from the Swiss Alps to the sea. The river has been a highway for traders between Italy, Switzerland, and Holland for many hundreds of years. The banks of the river are often high, with castles on the tops of the hills in places where it was easy for people to protect themselves in the warlike times of the past.

Much work has been done in clearing the rocks out of the Rhine, so that steamboats can pass up and down. These boats carry American grain and Swedish iron ore from Rotterdam and Antwerp upstream to the many manufacturing towns. In most places the valley is wide enough for towns to be built along the river. There is a railroad along each bank, and it is a very busy region. The Rhine Valley is a kind of New England to Germany, for most of her manufacturing is done here. At the city of Essen are the iron works that make this city the Pittsburgh of Germany.



Courtesy of Algem. Nederl. Verein, voor Ureemdelingenverkeer

Fig. 344. Fisherfolk from Volendam, Holland. Their clothes and skates are quite the style in Holland. Which are the faster, skates or canal boats?

342. Manufacture and trade.—The Germans have cultivated more of their land and used better farming methods than have the English. With all their pains, they have not been able to grow enough food for all the people. Germany is like Belgium, England, and all the other countries of West Europe, in that some of the people must make their living by manufacturing things to send abroad. Berlin, which is the capital and largest city, is also the chief manufacturing city. Munich, in south Germany, and Leipzig and Frankfort, in central Germany, are beautiful and important manufacturing cities. The chief industry of Leipzig is making books and maps. Another manufacturing city is Cologne, with many cotton and woolen mills. This city is famous for perfumery and for its cathedral. For six hundred years different kings and emperors had men at work building this cathedral.

The chief ports of Germany are Bremen, Hamburg, and Stettin. The largest of these is Hamburg on the Elbe River near its mouth. The Elbe is a river busy with boats, some of which go upstream to Prague, the capital city of Czechoslovakia, now a part of the new country of Czechoslovakia. Much of Germany's trade goes down the Rhine to Rotterdam and Antwerp, just as Canadian trade goes out through New York and Portland in the winter, and American trade from Chicago, and other Great Lake cities, goes out through Montreal in summer.

Germany has three coal fields, enough to smelt her iron and run her factories, and to make her in normal times the second country of Europe in manufacturing. Like England, Germany must import many raw materials, as well as some of her food. She needs to import wool, cotton, leather, rubber, and copper. She pays for these with beet sugar, chemicals, dyes, potash, machinery, leather goods, toys, and other



Fig. 345. On the Rhine. The town of Braubach and the castle of Marksburg. In olden times, robber barons lived in the castles and made travelers by boat pay them well to pass by. Nowadays the castles are nearly all in ruins, and large vineyards are cared for by the townspeople.



Photo. Brown Bros., N. Y.

Fig. 346. Women working in a beet field in Bavaria, one of the German states. In Germany and other parts of Europe, women do much of the farm work.

manufactures. The Germans do skilful work and make many microscopes and other instruments.

During the World War, the English Navy shut off Germany's trade. Nearly everyone in Germany lost weight because food was so scarce. There was no butter, because not enough cow feed came from the United States; and as no coconuts came from the Philippines the Germans could not make coconut butter as they had done before the war. Cotton was four dollars a pound, instead of twenty cents, and people wore paper clothes and wooden shoes. Copper roofs were taken from buildings to make electric wire; there was no rubber for automobile tires. In America fabrics faded because we had no German dyes. The potato vines in Maine did not grow as well, for want of German potash.

Eastern Germany and Northern Germany are farming regions. They send food and raw materials to the manufacturing region as our farming districts do.

QUESTIONS

1. What is meant by the expression, "The Dutch made Holland"? How was the work done?
2. How do people get about in Holland in summer? in winter?
3. Since Holland like Belgium has not land enough to support its dense population, what do thousands of Dutchmen do? In what distant places will you find them?
4. How do the Germans produce large crops on their rather poor soil? Name their chief farm products. Which do they use for food? Why?
5. What raw materials has Germany for manufacturing? What must she import?
6. Locate the chief trading centers through which her goods pass.
7. Through what three countries does the Rhine flow? Name a city in each country.
8. Why has the Rhine been a highway for so long? Will the Amazon ever be so traveled? Why?
9. Pick out boats going up the Rhine from the harbor of Antwerp. (Fig. 339.) What things from Sweden will they carry? from the United States?
10. Why is transportation in Holland slower and cheaper than in Canada or the United States? (Fig. 341.)
11. If Hamburg is north of your home, its summer days are longer than yours. How about its winter days?
12. Find on the physical map of Europe the two rivers of Germany and Holland which cross the low plain and flow into the North Sea.
13. What United States river has a delta? What are the chief crops there? Why cannot the Rhine delta raise these crops?
14. Are you north or south of the fiftieth parallel?
15. Arrange the capital cities that are north of this parallel as in model:

CITIES NORTH OF THE FIFTIETH PARALLEL.

CITY.	COUNTRY.
London	England

THE SCANDINAVIAN COUNTRIES

343. Closely related peoples.—Three European countries, Norway, Sweden, and Denmark, are all called by one name,—Scandinavia,—because their people are so much alike. The Scandinavians are a big, tall, strong, fair-haired people. They are well-educated. The three languages are so much alike that it is not at all hard for

the people of all the three countries to understand each other. Each of the countries has a king, but as in England, the people's Parliament really rules. Oslo (Christiania) is the capital of Norway, Stockholm is the capital of Sweden, and Copenhagen is the capital of Denmark.

Scandinavia is made up of two peninsulas and many islands. The southern peninsula, Denmark, is level and swampy, with a soil that in many places is poor and sandy. The Danes are a sensible people. While other nations have been busy getting ready for war, they have dug ditches and drained swamps; they have planted trees on their sandy land that was too poor to raise crops; they have improved their herds of cows and pigs; and best of all, they have made good schools all over their little country. The Danes love their country very much.

344. Denmark is a land of farmers.—Farming is very popular in Denmark. Even one of the sons of the King has taken up farming. The governments of the United States and of other countries have sent people to Denmark to learn how to take care of cattle, to make butter, and above all, to find out about the Danish country high schools (folk schools), in which the children of Denmark have learned how to do things and to be patriotic and love their country.

Copenhagen, the capital, has factories where fine pottery and many other things are made. Danish steamships sail from Copenhagen to the United States and to many other countries.



Fig. 347. A view of one of the dock streets in the city of Copenhagen, Denmark. Name something that might be in the boats.

As colonies, Denmark has Greenland, and the Faroe Islands north of Scotland. She once had Iceland. These lands produce little but fish, grass, and hay. The people keep many sheep, which eat the grass and furnish wool and skins for export.

345. The Scandinavian peninsula.—Norway and Sweden occupy a peninsula more than twice as large as the United Kingdom, but it has only one-sixth as many people. This is because it is not nearly so good a place in which to make a living as is England. Stony mountains take up much of the land; glaciers once covered it all and have made most of it rough and rocky like New England. It is so far north, that it is cold, and the winters very long. In fact, it is as far north as is Greenland, which is covered with a solid ice sheet. There is just one thing, the west wind from the warm Gulf Stream, which keeps Norway and Sweden from being covered with ice as Greenland is. The Gulf Stream comes out of Florida Strait and goes up to Norway, making the coast waters so warm



Photo. Brown Bros., N. Y.

Fig. 348. Norwegian peasant women carrying milk down the mountain from the pasture to the village.

that, even while the St. Lawrence in Canada is frozen shut, ships can sail into all the ports of Norway.

This does not keep the snow from covering the ground for many months, and this cold climate is bad for crops but not for men. In the long winter evenings, family groups often sit around the lamp, sewing, or making fish nets or wood carvings, while one of them reads aloud to the rest. Norwegians are fond of their winter sports of skating, coasting, and skiing. It was they who taught the people of Canada how to use skis.

346. Norway.—Norway has five things of great interest—snowfields that cover the highest land, great waterfalls, large mountain forests for lumber, little patches of level land for crops, and the sea for codfish and herring. The west wind, blowing against the mountains, makes heavy rain and snow, and so the mountains are covered with forests, like those of south Alaska.

The coast of Norway has many long, deep bays, called fjords. For miles and

miles ships may sail into these bays, which seem like rivers with mountainous shores. The sides are so steep that there is rarely room for a house along the shore.

347. Industries.—What would you do in such a country? Why, go sailing and fishing, of course. With a coast like theirs they have to go to sea. For hundreds of years the people of Norway have been great sailors. Their strong wooden boats went to Iceland and Greenland and North America a thousand years ago. To-day

one-fifth of all the men in Norway are sailors, and many others are building boats in Norway. Many of the boat-builders in the United States have come from that country. Norwegian ships carry freight on many a distant sea. They even bring some of our bananas from Central America to New Orleans and New York. Hundreds of Norwegian boats go out from the ports of Bergen, Stavanger, and other fishing



Photo. Williams, Brown & Earle

Fig. 349. The long, deep, narrow fjords of the Norway coast enable boats to bring their freight far inland. Does this country look good for farming?



Photo. Williams, Brown & Earle

Fig. 350. Making hay in Norway. Contrast with Figure 115. Why do they put the hay on racks to dry instead of stacking it?

towns, to catch herring and codfish, some of which are sent to foreign countries.

Norway also sells lumber from her big forests, and paper pulp, made by grinding the wood of the smaller trees.

Norway and Sweden have no coal with which to run their mills, but there is plenty of water power, because there are so many waterfalls. So they need buy from England only enough coal to run their ships and to heat the houses in a few of the cities. Most of the people live near the forests and burn wood.

348. Sweden.—Sweden is much like Norway, but it is larger, and has more forest land and more low land. It also extends farther south, and for that reason has more land suitable for farming than has Norway. This is the reason why it has nearly three times as many people.

In both of these countries, the climate is so cool that the farmers must live in the southern part of the country. There they raise potatoes, turnips, barley, oats and

hay, all of which are crops that do well in a cool climate. But having no wheat these people have to buy nearly all that they use for bread. They also buy grain for their cows. Sweden sells butter, lumber, paper pulp, iron ore, and iron. You remember (Sec. 197) that England uses Swedish iron ore. The iron that Sweden herself makes is of very fine quality. Millions of little boxes of safety matches made of soft wood are sent from Sweden to the United States every year.

349. Lapland and reindeer.—In the extreme northern part of Norway and Sweden, and in the neighboring part of Russia, where it is too cold for trees to grow, there is nothing but low bushes, grass and moss. This is Lapland, a region much like a part of our own Eskimo land. The Lapps are yellow people or Mongolians, like the Eskimos, but they are much better off than the Eskimos, because they long ago tamed the wild reindeer. This animal lives on the moss and grass, and gives the



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Fig. 351. Logs at a Norwegian mill ready for sawing. Where may this lumber go?



Courtesy of "Asia," American Magazine on the Orient, N. Y.
Fig. 352. Laplanders and their reindeer.

Laplander milk, and draws his sled. The Lapps wrap themselves in plenty of reindeer-skin clothes, live in tents, and follow their herds of reindeer wherever there is food for them to eat. How would you like to live that way?

350. Finland.—To the east of Sweden across the Gulf of Bothnia is Finland, a cold rough country with many lakes and thickly covered with forest. For a long time Finland was ruled by the Czar of Russia, but it is now independent. The Finns are much like the Swedes, tall, light-haired people, intelligent, and well educated. Like the Swedes, the Finns make most of their living by farming and chopping timber that goes to England, Germany, Holland, and Belgium.

QUESTIONS

1. How have the Danes improved their country? 2. Why have governments of the United States and other countries sent people to Denmark? 3. Sketch the peninsula of Scandinavia. Put in the chief cities and North Cape. 4. Why has Sweden nearly three times as many people as Norway?

5. How many degrees is it from North Cape to the North Pole? how many miles? 6. What makes the difference in climate between North

Cape and Point Barrow? 7. What are fjords? What is beautiful about them?

8. Why does Sweden have less rain than Norway? 9. What occupations do the Norwegians and Swedes who have settled in our North Central States take up in this country? Do you know anyone with a Norwegian or Swedish name? What is it? 10. From your United States history book find out what tempted the hardy Northmen out to sea long, long ago. How are the fishermen of Norway like those of Labrador? What fish do they catch? 11. Whom would you rather live with for a year, the Laplanders or the Eskimos?

Why? 12. What difference would it make to the Eskimos if they kept reindeer?

THE SWISS MOUNTAIN PEOPLE

351. The mountain pastures. — The bleating of the goats and the mooing of the cows wake Franz and his grandfather at daylight. They have been sleeping in a little stone hut high up on the side of the Alps in the center of mountainous Switzerland. It is July. The snow lies on the ground a few hundred feet above them. Only two weeks ago it covered the ground around the little stone cottage where they now live.

After an early breakfast, Franz and his grandfather are busy for two hours milking cows and goats. At the end of that time, they have two big tubs of milk, which the old man carefully cools in a trough of snow water. Franz goes out to tend the flocks as they hunt for their food. The big, heavy cows eat grass in the smoother places, but the frisky and sure-footed goats climb the steep rocks and eat grass and bushes from the face of the cliffs. Goats give good milk, and it is used in many mountainous countries.



Courtesy of G. E. Finch, Dillon, Mont.

Fig. 353. Franz's goats climb on the rocks. There is a great valley between them and the snowfields in the distance. Why do the goats have bells on their necks?

Franz follows the goats and cows to keep them from straying too far. If one or two wander in the wrong direction, he throws a stone so that it falls in front of them. Then they run back to the flock. By and by the boy sits down on a rock. To amuse himself he begins to yodel, and the echoes bring the sound back from a cliff on the other side of a little valley. Then he hears faintly another yodel. It is from another boy herder, so far away that his cows look like little toy cows only an inch long.

There are hundreds and thousands of herds of cattle and goats grazing on the slopes of the Alps in Switzerland, France, Italy, Germany, and Austria. In the winter deep snow covers all of the mountains. When the summer sun melts it away, grass and flowers spring up from the watersoaked earth, and the people lead their flocks from one little stone hut to the next as they follow the melting snow farther and farther up the high mountains.

Suddenly, as Franz watches his flock, he sees three men in knee breeches coming up the mountain. He becomes very much excited, for he has spoken to no one except his grandfather and the cows and goats since Saturday. The strangers are foreign-

ers who are taking a vacation in the Alps, and are out for a day's climb.

Noon comes. Franz drives the cows and goats out on the crest of a spur, a side mountain, running out from the main mountain. He likes to come here, for as he eats his lunch of bread and cheese he can look down from the end of this spur and see many things. A thousand feet below is the little stone cottage where he and his grandfather lived in June. A thousand feet above him, in the fast melting snow, stands the cottage where they will be in August. Far above that are the sharp rocks sticking up out of the perpetual snow of the high Alps.

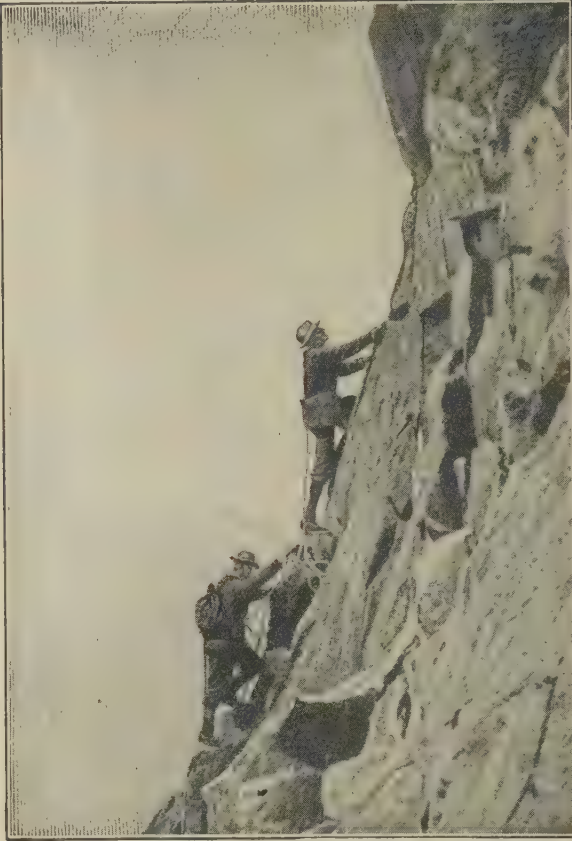
352. The valley village.—Down the mountainside, on the lower slopes above the village, he sees the hay field where his father and big brother, with scythe and rake, are making hay to feed to the cows and goats when winter again covers everything with snow, and the herds have gone back to their barn in the village. Still farther away, beside a shining lake, is the village where Franz's family lives. The garden and fields about his home lie down



Fig. 354. Grandfather milking one of the cows.



Fig. 355.



© Underwood & Underwood, N. Y.

Fig. 356. Climbing the steep mountainsides is a favorite pursuit of tourists in Switzerland. Would you like to climb such a mountain?

there spread out like a checkerboard. He sees a white speck, and wonders if it is his mother out in the field hoeing the potatoes that the family will be eating next winter. The automobiles down there look like ants crawling along the white road.

On the other side of the valley he sees the big hotel, where his older sister works all summer as a waitress, serving goats' milk and coffee and many other good things to travelers from the United States, France, England, Holland, Italy, Australia, Argentina, and many other countries. The Swiss mountains are so beautiful that they attract thousands of travelers, who spend so much money that the care of tourists is the best business in Switzerland.

Beyond the hotel, Franz sees the white flash of a waterfall, with a gray stone building at its foot. This is the power plant. From the water of the fall it makes power to light the town and run the silk mill and the cotton mill down by the railroad station. Swiss waterfalls run the cotton and silk mills that support many of the people of that country.

In the town spread out like a map below him, Franz sees one more building. It is the big school where he hopes to go next year and begin the studies that will make him an engineer. He resolves then and there that some day he is going to run that cotton mill, and he knows that education and training will help him in that ambition.

The sun is getting low, and Franz drives his flock slowly back to the stone cottage, where his grandfather shows him a big goats' milk cheese and two cows' milk cheeses that have been made since morning.

The old man and the boy do the evening milking and then soon go to bed, for the animals will call them early in the morning.

The next day is Saturday, the best day of the week! Then Franz's mother and



Courtesy of Swiss Federal R. R., N. Y.

Fig. 357. The citizens of a Swiss canton or state voting in the public square of their capital, Glarus.



Fig. 358. Relief Map of Europe.

father make the hard climb from the village in the valley to the stone hut on the far heights to see their boy and the grandfather. They bring clean clothes, bread, sausage, cabbages, potatoes, and other things to eat. When they go down the mountain, their horse almost staggers, as he carries all the cheeses grandfather has made since the Saturday before.

QUESTIONS

1. If you could talk with Franz, what questions would you ask him?
2. Why are the streams of Switzerland full and noisy in summer? What do they carry down the mountain sides?
3. Compare the sky outline of this mountain range (Fig. 353) with the Appalachian and the Rocky Mountains (Figs. 46 and 122). Which one looks more like the Alps?
4. What qualities would both a man and a goat need to climb such steep slopes?
5. How many people do you think are standing in the circle in the public square of Glarus (Fig. 357)? Is there a public square in your town?
6. What is the "white coal" of Switzerland? Why is it called thus?

SWITZERLAND AND AUSTRIA

353. A land of mountains.—We already know several things about life in Switzerland, the home of Franz. It is a good little country all hemmed in by mountains. Much of the higher part is always covered with snow. Below the snow are the mountain pastures and the mountain forests; and, still farther down, the hay fields, orchards, gardens, and farms. Bear and deer do not live in these mountains as they do in

our Rockies. Men have hunted on the Swiss mountains so long that the only large wild animal there now is the chamois, a wild, rock-climbing animal something like a goat and very difficult to shoot.

354. Three languages.—The Swiss people have three different languages. Those living in the valleys opening south into Italy speak Italian; those living in the valleys opening west toward France speak French; those in the valleys sloping north speak German. When the Swiss Government prints a book, it must print it in the three languages. But no matter what language they speak, the people of Switzerland are always sure that they are Swiss.

355. A free government.—The Swiss Government is a republic, and it is a very good government indeed. It keeps good schools and good roads, and is just and kind in its dealings with people. Most of the open plains of Europe have been conquered many times by kings and generals with their armies. But mountains are so hard for armies to take that the Swiss

have been one of the freest peoples in the world. Instead of a legislature to which a few people are appointed to make laws for all, the voters of some Swiss valleys all meet at the public square of the town and vote by hundreds for what the people want. (See Fig. 357.)

356. Good workers.—As Switzerland has so few things that men can use, the



Photo. International Film Service, N. Y.

Fig. 359. An airplane view of a Swiss lake in the Alps mountains in winter. The lake is in a narrow valley which a glacier has dammed by pushing dirt into it.

people have to be very skilful in using what they have, and they must also be very industrious. They pay for most of the many things they must buy by helping travelers in their country to have a pleasant time. Then, too, they sell cheese and milk, chocolate, watches, fine machinery for factories, wood carvings, lace, ribbons, silk, and toys. Many of the toys in American toy stores come from Switzerland.

Bern is the capital. Basel and Zurich have factories for making silk and lace; Geneva is the watch-making center. You have probably heard of Swiss watches. Geneva, which is on beautiful Lake Geneva, was selected to be the capital of the world, the seat of the League of Nations.

357. **Austria.**—A large part of the Alps lies in that part of western Austria called "The Tyrol." The mountains there are not so high as they are in Switzerland, but, except for the snow fields, it is the same kind of country. The mountain farms and pastures enable the people to sell sheep, cattle, and horses. From the mountain forests, good oak lumber is sent to other parts of Europe. Sometimes the people in the towns make this lumber into furniture before it is sent away from Austria.

Eastern Austria is in the valley of the Danube River and its branches. There the farmers grow wheat, barley, rye, and many potatoes.

Parts of Austria have thick layers of salt under the ground, and salt mines have been worked for a long time. There is a city called Salzburg (Saltburg), because the people there work in the salt mines. Austria has also a small coal field, and Vienna, the capital, has some manufactures. But Austria does not have as much trade as do those countries, like Belgium



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Fig. 360. A Swiss wood carver at work. Could you carve an animal out of wood?

and England, that import many raw materials.

The Danube River is the chief highway of Austria. Some of Austria's trade, however, goes over to the Adriatic Sea at Trieste in Italy, and to the North Sea by way of the Elbe and the Rhine.

Before the World War, the King of Austria was the Emperor of Austria-Hungary, just as the King of Prussia, the largest state in Germany, was Emperor of Germany. This empire of Austria-Hungary had so many different races of people in it that eleven different languages were spoken in the Parliament that met in Vienna. Most of these peoples did not want to be a part of the Austro-Hungarian Empire, and the World War was started by a quarrel between the Austrians and the Serbians. The old empire is now divided between seven countries,—Poland, Czechoslovakia, Hungary, Rumania, Yugoslavia, Italy, and the present Austria. This new Austria is about the size of West Virginia, and has about as many people as Belgium.

QUESTIONS

1. What languages are spoken in Switzerland? What disadvantages are there in having so many? 2. Why do the Swiss import so many articles? How do they pay for them? 3. Name and locate their chief manufacturing cities. Which is the seat of the League of Nations? 4. Name the crops raised in eastern Austria. 5. Why has Austria less commerce than Belgium or Holland?

6. Fill in these blanks:

Though Switzerland is little, its mountains supply Europe with these four large rivers: — in France, — in Germany, — in Germany and Austria, and — in Italy.

7. Into what water does the Danube River flow? the Rhine? the Po? the Rhone? 8. Why have the Swiss been able to build so many hotels in their mountains?

9. Why have the Swiss been so free? Describe their government. Name and locate their largest city. 10. Name the capital of Switzerland and of each country bordering it. 11. If you do not know the story of William Tell, ask your teacher to read it aloud.

THE ITALIAN MOUNTAIN PEOPLE

358. Mountain village gardens.—Toni Damiani lives in a stone house, in a village of fifteen stone houses on the mountain side, beside a fine stone road that crosses the mountains between Florence and Venice in Italy. What mountains are those?

Toni's father has a vegetable garden and two little fields of an acre each, on which he grows wheat one year and beans the next. The hillside on which the village stands is so steep that the land would wash away in the hard rains if the people had not made it into steps, or terraces, that go up the hillsides like steps for giants to climb. The grassy terrace banks hold the earth in place, so that the people can grow their crops on the level tops of the terraces.

All together, the gardens and cultivated fields belonging to the fifteen families of this village are only about as big as one American corn field. A mile and a half

away, on a spur of the mountain, Toni can see the gardens around the next village. Between Toni's village and the next are trees—nothing but trees. Chestnut trees are everywhere, up and down the mountains. Only very far away in the plain, distant and hazy, can he see any more cleared lands.

359. Mountain tree farms.—For miles and miles, every chestnut tree on this mountain side is of an extra good variety, so that it is a tree yielding many nuts of fine quality. Toni's father has fourteen acres of chestnut orchard. Even the playground around the village school is shaded by big chestnut trees.

Toni's mother has ten fine milch goats which browse on the bushes and grass beneath the chestnut trees. Toni and his sister Maria take turns herding the goats to keep them from wandering away on the mountain. Each morning and each evening their mother gets a pail of goats' milk from her ten goats. Some of the milk is kept for the family to drink; the rest is made into cheese, part of which is put away for the winter, and the rest sold.

360. Chestnut harvest.—In September, Toni's father spends two weeks cutting down with the scythe the bushes and weeds that the goats have not eaten. This makes it easy to find the chestnuts when they begin to fall in October. October is a busy month. School closes at chestnut time, so that the children can help do the great work of the year. All day long the whole family is out on the hillside picking up chestnuts, and several times a day the donkey with two sacks of nuts on his back is led down to the village.

The chestnuts are spread out, two or three feet deep, in the second story of a little stone house beside the garden. This



Photo. J. Russell Smith

Fig. 361. An Italian mountain side made into terraced gardens, with a chestnut orchard in the background.

chestnut house has cracks in the floor, through which smoke and heat come from a slow fire in the basement below. Thus the chestnuts are dried out so that they will keep like wheat or corn.

After the nuts are thoroughly dry, Toni's father beats them with a stick, so that the brittle shells fly off. Sometimes the dried nuts are pounded and used as we use oatmeal. Sometimes they are boiled and used as we use boiled potatoes. Sometimes they are ground and made into flour. Bread made of chestnut flour and cheese made of goats' milk are good food. Some of the dried chestnuts are used in the winter to feed the goats, the donkey, and the pig.

After the people have picked up all the best nuts, they turn the pigs out among the trees to have a jolly time hunting through the leaves for chestnuts. Thus the pigs are fattened before they are made into ham, bacon, and sausage for the family's winter meat supply.

By the middle of November, the chestnut harvest is over. Toni and Maria then go to school, and read in their geographies about America. Their father has begun his winter work making furniture in his little carpenter shop beside the stone road. Some of the men in the village go away in

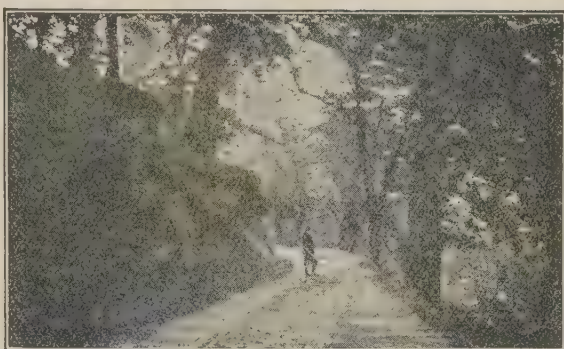


Photo. J. Russell Smith

Fig. 362. Good chestnut trees make Italian hillsides as valuable as good American farms.

the winter to work in the stone quarries and at road-building, whenever they can find a job.

361. Other chestnut regions.—Chestnut orchards and villages of chestnut growers are to be found in many parts of southern Europe. There are many such in the central highlands of France, on both slopes of the Pyrenees Mountains, on the slopes of the Alps in France and in Italy, and along the Apennines from one end of Italy to the other. Whole mountain sides are covered with chestnut orchards in the islands of Sicily, Corsica, and Sardinia, and also in the mountains of Greece and in some places in the Balkans. Ever since the time of the Roman Empire, fifteen hundred years ago, these chestnut forests have been feeding thousands and thousands of mountain people and their animals, in all the European countries that touch the Mediterranean.

QUESTIONS

1. What things do the Italians help us do in America? Did they have to do these in Italy?
2. Would Toni's father make a bonfire of the bushes he cuts, as we do in America?
3. What do these carefully made terraces show about the Italian farmers (Fig. 361)?
4. Describe the life of Italian children on a farm in the mountains. Prepare a little play showing their work for a day during the chestnut harvest.

5. Name the countries and islands of southern

Europe that have chestnut orchards. 6. Would you rather live with Toni in the Apennines, or with Franz on the Alps? Why?

7. Why do all European people have to be very saving of food and fuel? 8. Are the roads they build as good as about your home?

ITALY

362. The city of Naples.—Let us take a glimpse at Naples, the largest city of Italy. It seems to be as full of people as New York. So narrow are some of the streets that carts cannot pass each other. Everywhere there are crowds of dark-skinned, black-haired people who dress very much as we do, except that they wear brighter colors. A hand organ plays a lively tune, and children dance in the street, in and out among the passing people.

363. A volcano and a buried city.—From a high hill on the edge of the city we look away over the beautiful Bay of Naples. To the southward we see the volcano Vesuvius. A column of smoke rises from it and hangs above it like a cloud. A few years ago, this cloud, which is really dust and is called volcanic ash, was blown nine miles by the south wind and fell on the city of Naples like snow. The people had hard work keeping it shoveled off their house roofs so that its weight would not break them. Once, in the year 79 A. D., this volcano sent out such

showers of ash that it buried a city called Pompeii, near where Naples now is.

This buried city is so interesting that we must visit it. Pompeii was built by the Romans, the people who lived in Italy at the time of Christ. After having been buried for many hundred years, it was uncovered, and its ruins tell us many things about the people who built it. We

can now walk along its streets, paved nineteen hundred years ago, and see the stone walls of beautiful houses in which lived the educated people of that time. We see pictures on the walls, statues, fine vases, dishes of pottery and metal, and many other things made and used nearly two thousand years ago.

364. Crops from lava.—These ancient ash showers have now turned into rich, volcanic soil that grows vegetables for the



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Fig. 363. A street scene in Naples. The goat is milked at the customer's door, into the customer's cup.

Naples market. Many people owning little farms near Vesuvius and Pompeii live in villages built of lava stones. There are orange trees in the yards, and English walnut trees along the good stone roads. Nuts from these walnut trees are sent to New York every autumn.

Between Naples and Rome, we see fields of grape vines (vineyards) and many fields of wheat and hay. The women are working in the fields with the men. The hay is cut with scythes, for the Italians do not

seem to be very fond of machinery. The wagons are drawn by big, slow, white oxen, with long, dangerous-looking horns.

365. Rome and Florence.—In the old city of Rome we find many Americans and other foreigners who have come to see the famous art galleries, the beautiful buildings, and the ruins of the palaces, theaters, temples, and other public buildings made by the Romans long ago. For several hundred years Rome was the capital of the great Roman Empire, which ruled all the people then living in the countries on the shores of the Mediterranean Sea.

Rome is now the capital of the Kingdom of Italy and the place where the Italian Parliament meets. It is also the home of the Pope, the head of the Roman Catholic church.

The city of Florence is famous for her splendid art galleries, her beautiful buildings, and the plaiting of straw.

366. A hilly country.—Unlike England and France, most of Italy is hilly or mountainous. (See Fig. 358.) You have seen that in the Apennines the land could be used only by making terraces on the steep hillsides, or letting trees grow. In many parts of Italy, the steep hillsides have been plowed so many times that the rain has washed nearly all the good land away,

and people there can no longer raise good crops.

Even the Italian islands of Sardinia and Sicily are hilly. In eastern Sicily, Mt. Etna, a large volcano, two miles high, has poured its lava for fifteen miles in all directions. Much of this lava is so old that it has turned into rich soil. The slopes of the mountain are therefore generally covered with farms and orchards.

Countries that have active volcanoes usually have earthquakes also. From time to time buildings are shaken down in southern Italy. In the city of Messina in 1911, many thousands of people were buried under falling walls in a terrible earthquake.

367. A beautiful coast.—A beautiful road reaches from Rome to Genoa. Following it, one sees that Italy is a very hilly country. The smooth stone road



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Fig. 364. The traveler of to-day can walk along the streets of Pompeii which for eighteen hundred years were buried under volcanic ash.

follows the shore of the sea, but even here in many places it must go over high hills. This is because the waves beat at the base of the rocky cliffs, so that there is no room for a road along the shore. Villages are often perched along the hillside almost like birds' nests, and every little patch of ground, if only as big as a table, is carefully planted with vegetables or flowers.

In the vicinity of Genoa, this beautiful coast is called the Italian Riviera. It is



© Keystone View Co.

Fig. 365. One of the galleries of statues in the Vatican Palace, Rome. These statues and the works of art are many hundred years old.



© Underwood & Underwood, N. Y.

Fig. 366. A statue of Moses made by Michael Angelo, the greatest of the Italian sculptors. It is to be seen in one of the churches of Rome.

warm because the Apennines and the Alps keep off the cold north winds. There are big hotels in every little town along the Gulf of Genoa, and we see people from the United States, England, Holland, Norway, and many other countries, for Italy is a country that travelers love to visit.

We stand on a hill looking down over Genoa, the city where Columbus was born. We see a long curved wall built out into the sea, and a lighthouse on the end of it. This wall makes the harbor, and the lighthouse shows ships where to go. As Genoa has no natural harbor, men had to build this wall. Inside of it we see ships from New Orleans, Buenos Aires, Antofagasta, and England. What did they bring?

368. The plains of Lombardy.—We go northward from Genoa through a tunnel under the Apennines, and are soon on a

wide, level, plain, the basin of the Po River, sometimes called the plains of Lombardy. This is the best farm land in Italy. Some of the land is being irrigated with water from Alpine snow fields, and every foot of it is being cultivated. In this fertile region the people grow wheat and corn, rice and vegetables, as well as mulberry trees. These trees furnish food for the silkworms that help the people make one of the valuable exports of Italy. The plains of Lombardy are not as large as the plains of eastern England, and it would take fifty Lombardies to equal the level land of our North Central States.

Italy has so many people that she cannot grow food enough for all of them. Is it any wonder that so many Italians want to come to the United States where there is so much good land unused?

369. Oranges and Lemons.

—Italy is warmer than England and France, so warm that oranges and lemons grow south of Naples, where the influence of the warm air from Africa is felt. These fruits, in fact, are one of the chief exports of the island of Sicily. Palermo ships thousands and thousands of boxes of lemons and oranges to New York and Liverpool.

370. Wheat.—The Italian climate suits wheat, because it can be planted in the autumn at the time the Mediterranean rains begin.

The plants grow all winter, and the grain ripens in the early summer. This shows why Italians grow more wheat than corn. The summer is hot enough to grow corn, but corn needs many showers, so the Italians can grow it only in those few places that they can irrigate. Macaroni and spaghetti are made from the wheat flour.

The climate is also suited to the growing of grapes. The grape vine sends its roots far down into the earth, and thus gets the moisture that has soaked deep into the ground during the winter rains. Many thousands of people in Italy make their living by growing grapes. Often they cultivate the ground at cost of very hard work, using spades instead of plows. In the autumn they are busy making wine from the grapes. Wine is one of the chief exports. The summer is like that of California.

371. The olive.—Many an Italian hillside is green with olive orchards. The olive is a wonderful tree. It lives for many centuries, sometimes a thousand years.



© Publishers' Photo Service

Fig. 367. A view on the rugged Mediterranean coast and crowded lands of Italy, at Amalfi, near Naples. The arches hold up the road.

Like the grape, it needs little water. In the autumn everybody who can work is busy picking olives. The fruit is then crushed under a big stone wheel and put into a press that squeezes oil out of the pulp. Olive oil keeps much better than butter, and is much used in its place in Italy and Spain and other countries along the Mediterranean. It is exported from all three of the southern peninsula countries of Europe.

372. Coal and water power.—Italy has no coal. All her coal must come in ships from other countries. When ships were scarce during the World War, the Italian people nearly froze, and many of the factories could not be run. Luckily, an Italian engineer found some boiling springs near the city of Florence. The water of these springs was hot enough to boil water in pipes and make steam with which to run the factory engines. There are many waterfalls in the southern Alps, and near them the Italians have built electric power plants. The electricity is carried by wires



Fig. 368. A scene in Venice, where there are canals instead of streets and people use gondolas in place of automobiles.

Photo. Brown Bros., N. Y.

to run the factories of Milan, Turin, and other cities of northern Italy.

In the south of Italy, there are no snow fields on the mountains and therefore no melting snow to make water power in summer when there is no rain. Thus you see southern Italy is not a manufacturing place. Since all of the land has been long in use, there is not much for the young men to do. Therefore, many hundreds of thousands of Italians have emigrated from southern Italy and Sicily to other countries. Italian emigrants raise most of the wheat in Argentina and most of the coffee in Brazil. So many have come to the United States that there are more Italians in New York than in any city of Italy.

373. Sulphur and marble.—Italy has two minerals, sulphur and marble, and these are sent to many countries. The finest marble statues in the world are made of the marble from Carrara, on the coast not far from Genoa.

Sulphur is often found in the sides of volcanoes. Near Etna, Sicilians dig much

of the world's sulphur supply, even much of the sulphur we use in America. The ships that take American cotton, wheat, and lumber to Italy carry Sicilian sulphur back to the United States.

374. Manufacture and cities.—It is plain to you why Italy has less manufacturing than France or Switzerland, and why her cities are not so large as those of the United States and England. Naples, the largest city of Italy, is about the size of Boston, and is an important seaport. However, Genoa is

the chief port of Italy, because most of the trade of Lombardy and part of the Swiss trade pass through it. There is no good harbor near Rome.

Venice is much visited by travelers because it has an interesting history and many beautiful buildings. It was built on some small islands long ago, by a group of people who wanted to be safe from robbers. Instead of streets, there are canals, and instead of taking a carriage or an automobile, one takes a graceful boat called a gondola, to go from place to place. Long before Columbus discovered America, Venice was the greatest trading city in the world. Many beautiful buildings of that time still stand. People in almost every country in the world wear colored glass beads made by the Venetian glass makers.

Across the Adriatic from Venice are Trieste and Fiume, cities with Italian people whose chief business is to handle the imports and exports of parts of Czechoslovakia, Yugoslavia, Austria, and Hungary.

QUESTIONS

1. Why do travelers love to visit Italy?
 2. Travel toward Italy on a straight line from some point in the school room. Is the climate of Italy different from that of your home? Why?
 3. Find out something about Rome that will interest your classmates. Bring pictures and make an exhibition of the cities and country of Italy.
 4. Where does Italy obtain the power for manufacturing?
 5. What minerals does Italy export? For what is each used?
 6. Tell why Italy imports nitrate from Antofagasta.

7. What city in northern Italy is especially interesting to Americans? Why?
 8. Why have so many Italians emigrated to America? What kinds of work do they do here?
 9. What mountains are north of the Lombardy Plain? South of it?
 10. What is it about Italy that has taught the people to cultivate every bit of ground possible? Why do we not do this in America?
 11. Is the gondola (Fig. 368) more like the Eskimo kayak, the Indian canoe, or the fisherman's dory?

12. Name some of the old buildings of the United States. Where do travelers go to see the historic buildings of America?
 13. To what Italian seaport does the chocolate for the Swiss factories come?
 14. What is a "Mediterranean climate"? What part of the United States has such a climate?

SPAIN AND PORTUGAL

375. A poor gentleman.—In Spain the people think that a gentleman should not work. If a man builds a railroad, runs a factory, grows crops on his land, or makes automobiles, he is not thought to be a gentleman, because he works. Everyone wants to be a gentleman; so in Spain no one works if he can help it.

Schools need money to keep them going, but the Spaniards haven't much money because they do not work enough. So the poorer people are ignorant, and much poorer than they need to be. They cannot read, nor do they know how to make machines or run engines. The Spanish farmers work very hard and their crops are only half as large as those of Belgium or Holland. This is because they do not



Photo. J. Russell Smith

Fig. 369. A Spanish father, mother, brother, and baby sister sitting at the door of their hillside home. The warm dugout house has a chimney but no windows.

know as much about farming as do the better educated people of northern Europe. In Portugal, the same thing is true as in Spain.

The people of Spain and Portugal love music, ornaments, and bright-colored clothes. As so many of them cannot read, they spend much time listening to music. They are very polite, pleasant to meet, and are becoming interested in modern education and the dignity of labor.

376. Climate and crops.—Since Spain and Portugal have a climate much like that of Italy, we may expect them to grow the same kinds of crops. Most of Spain is a plateau, too cool for grapes, oranges, and olives, but good for growing wheat and for raising herds of cattle and flocks of sheep. Wheat, sheep, and wool make up, therefore, the chief wealth of the plateau.



Photo. J. Russell Smith

Fig. 370. Women hoeing beans beneath olive trees 700 years old, on the Spanish island of Majorca. Have we, in the United States, any fruit trees as old?

On the coast the climate is warmer, and near the rivers where there is water for irrigation, there are some level delta plains where vegetables, oranges, and other fruits are grown. English ships stop at Cadiz, Malaga, and Valencia and take these fruits and vegetables back home in the early spring when it is still cold in England. This trade is very much like the fruit and vegetable trade between our southern states and our northern states.

The lower lands of Spain that cannot be irrigated are often planted with grapes and olives. Many of the grapes are dried and sold as raisins. Spain sends many other dried fruits, as well as wines, to England, in return for coal and cloth and other manufactured goods that she must buy.

377. Minerals.—Spain has very little coal indeed, but is rich in metals, and exports

mercury, copper, lead, zinc, and iron ore. Much of the English iron is made of red Spanish ore, sent by ship-loads from the port of Bilbao on the Bay of Biscay. Most of the mines of Spain are managed by Englishmen, Frenchmen, Germans, and other foreigners, because the educated Spaniards are too proud to work.

378. Cork trees.—The Spanish summer is so hot and dry that the farmers cannot grow corn for their hogs as we do in the eastern United

States, or potatoes as they do in Germany and Poland. Therefore, most of the Spanish pigs are fattened on acorns in the large forests of cork oak trees.

Most of the cork used in every country of the world comes from Spain and Portugal. Cork is the soft bark of a certain oak tree. The owners of the cork forests strip the bark from the trees every nine or

ten years. Then it is packed up in bundles, which are put on the backs of donkeys and mules and carried long distances to the railroads. Spain does not have as many railroads as has France or Germany, and as most of the country roads are bad, much of the freight is carried on the backs of donkeys and mules rather than in wagons.

379. Cities and government.—In Barcelona, the chief port, there are cotton and woolen mills, but there is not much manufacturing

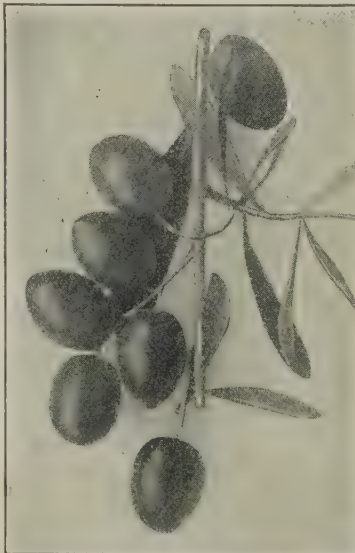


Fig. 371. A branch of fruit from the olive tree, about $\frac{1}{2}$ natural size.

in Spain, because the leading people think work is beneath them.

Spain is a kingdom. Madrid, on the central plateau, is its capital. Portugal has recently driven away her king and set up a republic. Her capital is Lisbon. Oporto is the chief port, shipping wine, cork and fruit.

The Spaniards and the Portuguese, although they speak different languages, are very much alike, about as much alike as are the people of the United States and Canada. What separates Spain and Portugal?



Photo. Brown Bros., N. Y.

Fig. 373. Stripping bark from the cork trees of Portugal.

QUESTIONS

1. Why do Spanish farmers have goats instead of cows? olive oil instead of butter? 2. Where in the United States do olives grow? 3. Is the olive tree tall, majestic, light, or feathery? 4. Where are the oldest fruit trees in the world? Which words in Question 3 apply to them? 5. List some trees useful to man for other things than for lumber and fuel. In the model below, write the name of the tree, the country it comes from, and its use.

USEFUL TREE PRODUCTS.

TREE.	COUNTRY.	USE.

6. Examine some quicksilver. Name its uses. Where is it mined?

7. Which is the dry season in Mediterranean countries? 8. When the rain falls on the bare slopes above the hillside house (Fig. 369), what does it wash into the streams? 9. Does this happen in forested mountain slopes? Have you seen it about your home?

10. What mountains are north of each of the Mediterranean peninsulas? 11. Why are there many poor people in Spain? 12. How might schools help? 13. How many different things does a Spaniard get from his cork forest?

14. What does a Spaniard think makes a gentleman? 15. What do you think makes a gentleman? 16. Do we use our mountains as well as Italians and Spaniards do?



Photo. J. Russell Smith

Fig. 372. Portuguese women taking vegetables to market.



Photo. U. S. Signal Corps

Fig. 374. An American soldier talking with a Yugoslav shepherd boy. Contrast this flock of sheep with the one shown in Fig. 117.

THE BALKAN COUNTRIES

380. Shut in by mountains.—If you tried to go from Venice into the Danube valley, you would have a hard climb, because the high Dinaric Alps are close to the east coast of the Adriatic Sea. The part of this mountain system which continues southward into Greece is called the Pindus, and the mountains extending eastward toward the Black Sea are called the Balkans. The region in which they all lie is called the Balkan Peninsula.

Some mountains have ridges and valleys, but the Balkans look as though they had been mixed up with a huge spoon. Mountains are piled around in all directions, with little open valleys in between. Sometimes the stream that flows through one of these valleys goes out through a gorge so sharp and narrow that no road can follow it. For this reason, the only way out of these enclosed mountain valleys is over the mountains. Often the road is only a mule path, with long, hard, dangerous climbs. You can see why people thus shut in do not trade or travel much, and know but little about the outside world. Between the Adriatic Sea and the Black Sea there

is only one narrow valley through which a road can go all the way through the Balkans from north to south. This road runs from Belgrade to Sofia, and on to the Greek port of Saloniki. Trade and armies have followed this narrow path for thousands of years.

In all the rest of the Balkan Peninsula, steep mountains face you, no matter which way you turn. Traveling is so very hard indeed that many different peoples have lived in this region, each one keeping its own section and speaking its own language. These people are the Serbs, the Bulgars, the Rumanians, the Albanians, the Greeks, and the Turks. Since the World War each people has a country of its own, but for a long while the Turks ruled them all and treated them unjustly and cruelly. There have been many terrible wars among the Balkan peoples. The people are poor and mostly uneducated; but, being shepherds and having lived out-of-doors most of their lives, they are big, healthy men. They are strong and fearless. The people of Montenegro, now part of Yugoslavia, have always been a free people, fighting



Photo. Brown Bros., N. Y.

Fig. 375. A wooden plow beneath Greek olive trees.

back the Turks from their poor, rough mountains.

381. Poverty.—The Balkan countries do not have much rain in the summer, and are stony and steep besides. Only a small amount of wheat and corn is grown in the few little valleys where smooth land can be found. Most of the wealth of the people is made up of sheep and goats that pasture on the rocky hills. Lumber is scarce; so that people often live in villages of whitewashed stone houses with straw roofs and earth floors. In their rough country it is so hard to travel and carry freight that they do not have much trade. Instead of woolen factories, many of the people still have looms in their homes, and make carpets and cloth from the wool shorn from their own flocks. Travelers see little barefooted girls out on the hills herding the goats and sheep, knitting or spinning yarn



Photo. Brown Bros., N. Y.

Fig. 377. Grape harvest time in a Greek vineyard.

as they walk. When the men dress up for a holiday they wear stockings with figures of flowers and other designs knitted in them. Can anyone you know knit a flower design into a stocking?

The land is so rough that the Balkan people can use very few farming machines on it. That is one reason why they are poor. On some of the hills of Bulgaria

are many plum orchards, and much plum marmalade is sent from there to France and England. In other parts of Bulgaria are large gardens of roses. People take whole baskets of rose petals from these gardens, and make a few drops of a delicate and expensive perfume called attar of roses.

In the mountains of Serbia there are oak forests where goats and cattle pasture and where hogs fatten on the acorns. The bristles in many of our best hair



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Fig. 376. A view of Athens from the Acropolis, a fortified hill upon which still stand ruins of beautiful temples more than two thousand years old. The modern city is seen at the foot of the hill.



© Publishers' Photo Service

Fig. 378. The busy port of Constantinople, where ships from every land may be seen. More different races of people are said to meet on this bridge than at any other place in the world.

brushes have grown on the backs of these Balkan swine.

382. Greece.—Greece differs from the other Balkan countries in having a long and irregular sea coast. Its many harbors have made it very easy for travelers to reach there and to come away again. In past centuries, when the Serbs and Albanians were stuck fast in their mountain valleys, the Greeks were sailing around the Mediterranean Sea, making settlements in Sicily, Italy, and Asia Minor, and in the islands of the Aegean Sea. Thus the Greeks learned everything they could from other people.

Athens, the capital of Greece, was once the greatest city in the world. It still has many ruins of temples and other buildings that were built at the time when Greece had the greatest builders, the greatest writers, the greatest sculptors, the finest schools, and the wisest men in the world. Many statues and beautiful carvings have been carried away from Athens and kept as treasures in the museums of other countries. Perhaps you can go to a museum and see some of these wonderful

things, or perhaps you can find some pictures of them.

The southern part of Greece is much like Italy in climate and products, and the chief thing the people have to sell is small dried grapes, which our grocers call currants.

383. Constantinople is the largest Balkan city and has many kinds of people. It was a great city more than a thousand years ago, because it is at the crossroads where ships go from the Black Sea

to the Mediterranean, and where caravans pass from Europe to Asia. People of many races meet there. This fact makes it a fine place for trade. There have been many, many wars to take or to keep Constantinople. It was a great city in the time of the Romans, and an even greater city in 1453, when the Turks came across from Asia and took it. It has been the Turkish capital ever since that time. The wonderful Christian churches were turned into mosques—that is, into churches in which the Mohammedans worship Allah, as they call God.

384. The new countries.—Many of the wars of the world have happened because one people was trying to rule another. At the end of the World War the people at the peace conference tried to stop this cause of war by making several new countries in Central Europe. The boundaries of other countries were changed. (See Figs. 315 and 380.) As far as possible each people was left to rule itself.

385. Yugoslavia is the name given to the new Balkan country that has been formed to let all the Serbian people have

a government of their own. It is made up of what used to be the two independent countries of Serbia and Montenegro, and the Serbian provinces of Austria-Hungary. Its capital is Belgrade on the Danube. Most of its trade goes in and out by way of Trieste and Fiume.

386. Albania.—The Albanians have a little bit of rough and rocky country on the shore of the Adriatic Sea, wedged in between Greece and Yugoslavia. They are the poorest and most ignorant of the Balkan peoples, but they are ready to fight bravely to keep their country free.

387. Bulgaria.—The Bulgarians have the best country in the Balkans because it is less mountainous than the others. Although many sheep and cattle are raised, agriculture is the leading industry. The principal products are corn and wheat.

QUESTIONS

1. Name and locate the countries of Europe that touch the Mediterranean. Which are called Balkan States? 2. Which Balkan country borders the Black Sea? What large river of central Europe flows into the Black Sea? Where does it rise? 3. What makes the location of Belgrade important? 4. Give two reasons for Constantinople's greatness for so many hundred years. 5. List the peoples living in the Balkan countries, and opposite each name the country in which each lives.

6. When the ships of England went to Con-

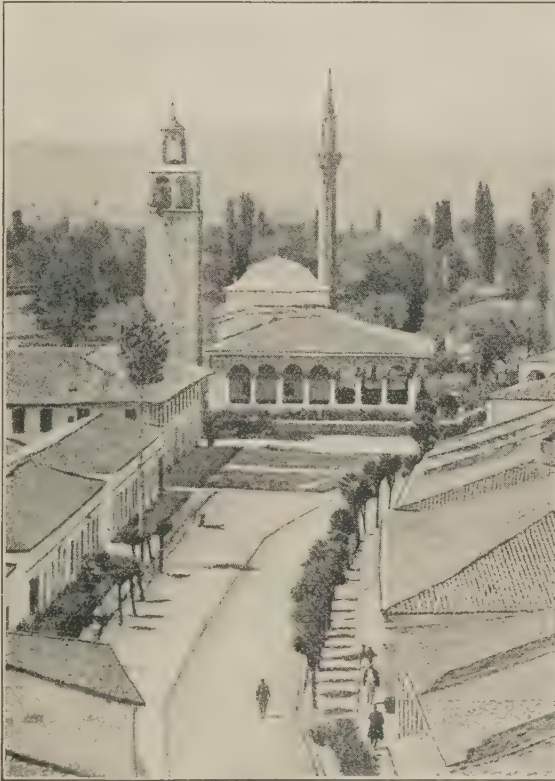
stantinople in the World War, what waters did they pass through? 7. Why are the house-roofs in Athens nearly flat and those in Copenhagen where there is snow (Fig. 347) steep? How are the roofs in Albania? (Fig. 379.) 8. After reading Section 381, be able to give all the reasons why the people of the Balkan countries are so poor.

THE NEW COUNTRIES OF CENTRAL EUROPE

388. Making new nations.—When Yugoslavia and Albania were made free, there were also three new countries made in the middle of Europe between the Baltic Sea and the Black Sea. These countries are Poland, Czechoslovakia, and Hungary. Rumania was also made much larger than it had been before.

389. Poles.—For many hundreds of years, the kings of Poland ruled their own

country and their own people from their capital at Warsaw. In 1683, when the Turks were about to conquer all Europe, the Polish army defeated them at Vienna and drove them back to the Balkans. About the time that our own United States became a free and independent country, the kings of Prussia and Austria and the Czar of Russia made war on Poland from all sides. Together they conquered Poland and divided up her land among them. For more than a hundred and thirty



Courtesy of American Red Cross

Fig. 379. The main street of Tirana, one of the towns in hilly Albania. You can see a Turkish church, which is called a mosque, in the center.



Fig. 380. Map of Central Europe showing boundaries as they were in 1914, before the World War.

years the Poles have been a people divided and oppressed, but they have always longed for freedom. Since Germany, Austria, and Russia have been made to set free the Polish lands, the Polish people are again independent. Their seaport is the free city of Danzig, on the Baltic. The Poles now have a president and a parliament.

390. Czechs and Slovaks.—Czechoslovakia, another new republic, is the land of the Czechs and Slovaks, two black-haired, white-skinned peoples who live in what used to be a part of Austria. Like Poland, this region was once an independent country, which was called Bohemia. The Czechoslovaks did not like to be ruled by the Austrians, and are very glad to have their own country with its capital at the old, old city of Prague, on the upper Elbe, to which steamers come from Hamburg.

391. Hungarians.—Hungary, too, was an independent kingdom long ago. For many years before the World War it was a part of the Austro-Hungarian Empire. It is now independent, but not so large as it used to be, because the people of Eastern Hungary were Rumanians, and that region is now a part of Rumania. The people of South Hungary were Slavs, and their land is now a part of Yugoslavia.

392. Rumanians.—The Rumanians are glad to be free from Hungarian rule, and to be joined with the other Rumanians, under their own king.

Many people from these four countries emigrated to the United States in the twenty years before the World War. The Czechs, Slovaks, and some of the Poles and Rumanians were among the many subject peoples in the old Austro-Hungarian Empire. In the World War, Austria and Germany tried to make these peoples fight



Courtesy of the Polish Legation

Fig. 381. The Cathedral, Krakow, the Westminster Abbey of Poland.

against their own friends in Rumania and Russia.

These four countries—Rumania, Hungary, Czechoslovakia, and Poland—are made up of four different plains and one long curved mountain system, which is composed of the Carpathians and the Transylvanian Alps.

393. Poland.—The first of these plains, the plain of Poland, is really a part of the great central plain we have already seen in Germany. The country is one great, level stretch of villages and farms, with fields of potatoes, rye, barley, sugar beets, hay, and flax. Polish trade goes through the seaport of Danzig, on the Baltic Sea. Warsaw, the capital of the Polish Republic, has some manufactures; but these four countries of middle Europe are like Kansas and Nebraska, lands where nearly all the people are raising food, rather than working in factories, so there are not many cities in Poland.

394. Czechoslovakia.—South of Poland lies Czechoslovakia. The Carpathian

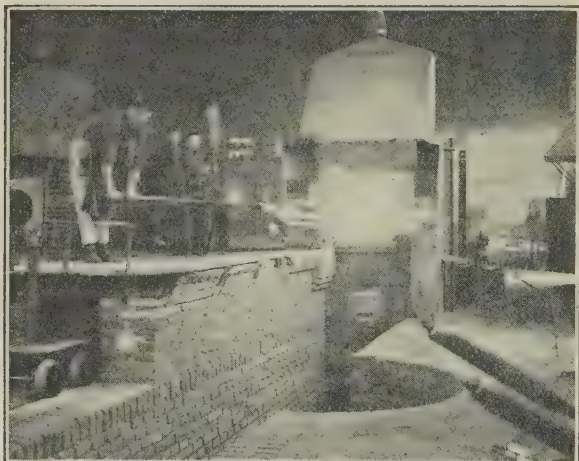


Fig. 382. Workman in a Prague Glass Works making plate glass; blowing the roll.

Mountains extend into Czechoslovakia and south of these mountains lies the plain of Bohemia. The river Elbe flows through this plain and then crosses Germany to the North Sea sixty miles beyond Hamburg. The Bohemian plain is much like the Polish plain. Its one large manufacturing city is Prague, the city of the Czechs, which is near a coal field. Iron goods and cloth are made here; and it is from Prague that we get the bright glass balls and beads for our Christmas trees.

395. Hungary and Rumania.—To the southeast of Bohemia is the wide, level plain of Hungary. Budapest on the Danube is the capital of this country. Part of the Hungarian plain is wide and level, like Illinois or Dakota, and it is surrounded on all sides by mountains. It is one of the great wheat regions of the world. The climate is too warm for potatoes, of which there are so many in Bohemia and Poland. Wheat, corn, and herds of horses, mules, and cattle are the chief products of the great plain. The Danube River is the great highroad of Hungary and Rumania. A canal with locks has been built through the rocky pass called the Iron Gate, where the river

flows through the Carpathians. By using this canal, steamers can now go all the way from Vienna to the Black Sea, and small boats go on up into South Germany.

The fourth plain is that of Rumania east of the Carpathians. The farmers here grow large quantities of wheat and corn (Sec. 74), much of which goes in steamships down the Danube and out to Italy, Spain, Belgium, and England. Trace the route the grain ship follows, and tell the ports to which it may go.

QUESTIONS

1. Locate the new countries of central Europe. Trace the boundary of Rumania.
2. What is the chief occupation in these countries?
3. Why do we call the Danube a high-road? Name three European rivers which are highroads. To what ocean does each lead?
4. On the physical map of Europe, locate the Carpathian mountains and the Transylvania Alps.
5. What form of government has Poland? Name and locate its capital; its chief city.
6. What large river in Germany drains Czechoslovakia? Name the capital which is located on it. Tell of the manufacturing carried on there.
7. Name Rumania's chief products. To what countries are they exported? Trace the route of shipment. To what ports do they go?
8. What city of Hungary makes flour? What city of Minnesota?
9. On Fig. 380, compare the old boundaries of these new countries with the new ones.

EUROPEAN RUSSIA

396. The largest country of Europe.—Russia is so much the largest country in Europe that it is larger than all the rest of Europe put together. Before the World War it was two-thirds as large as the United States. It is a good country too. There is less land too dry for farming than in the United States, so that Russia has as much farmland as we have here. Russia has very few cities and is not as densely peopled as the countries of western Europe,

but before the World War it had more people than the whole United States and all of its possessions.

In no other large country does the level land cover so much of the surface as it does in Russia. There is not one high mountain in all Russia. The Valdai Hills, where many of the rivers rise, are not mountains at all. The great central plain of Europe reaches from the Baltic Sea to the Urals, which are very low mountains. Parts of this plain are so flat that the water does not run away to the streams, but makes large marshes where few people live, but where there are many mosquitoes. Along the Caspian Sea Russia has some land that is even below the level of the Atlantic Ocean. (Fig. 355.) The Caspian has no outlet except by evaporation, but this evaporation takes the water away a little faster than it comes in, so the sea is not as large or deep as it once was.

From south to north, the Russian plain reaches from the Black Sea to the White Sea, and canals have been built connecting the rivers flowing into all the four seas that touch Russia. What are these four seas? Name a large river flowing into each one.

The level surface of the country makes the rivers navigable, so that boats carry much of the freight. Railroads connect all the large cities. Although the land is level, the country roads in Russia are very bad. They are so poorly made and cared for that wagons often stick in the mud puddles, and have to be unloaded before they can be pulled out. Because the roads are so bad in summer, much of the



Photo. Brown Bros., N. Y.

Fig. 383. Russian peasants standing by the well in front of their straw-roofed home. How do they get water from the well? Why do they use this kind of roof?

hauling in the country districts is done in winter on sleighs.

The Volga river is the great thoroughfare through the eastern part of the country, where railroads are very few in number. One of the most striking of the popular songs of Russia is the "Volga Boatman's Song" which, with its plaintive air, describes the weary, almost endless, strain of the poor native with a rope over his shoulder, trudging along a path by the river, pulling away at the dead load of a boat against the current.

397. The tundras of Northern Russia.—Northwestern Russia is a part of Lapland. (Sec. 349.) This land near the Arctic Ocean is like Eskimo land—treeless, frozen most of the year, covered with grass and moss. In summer the ground thaws for a few inches, or perhaps a foot or two, and then some grass and flowers grow during the long, sunshiny days. Such level, treeless, frozen plains are called tundras. On them the reindeer is at home. Nearly all of the land north of the arctic circle is tundra, the land of the reindeer people.



© Keystone View Co.

Fig. 384. A Russian peasant woman crushing corn by hand to make the family bread. How is your breadstuff crushed? Where?

398. Forests of Russia.—South of the tundras is a wide belt of evergreen forest country like the Indians' great north woods in Canada. It reaches from the arctic circle to Leningrad (Petrograd), and from the Gulf of Bothnia to the Ural Mountains. Much lumber is cut there, and each year the lumber ships from other lands go to the Gulf of Bothnia and to the White Sea to secure cargoes of lumber for the countries of western Europe.

399. The farming belt.—At the Gulf of Finland, the farming belt begins. From there to the Black Sea the great Russian plain is dotted with villages scattered among the endless fields of potatoes, grain, and hay. If you tried to cross it in a sleigh or in an automobile you would think that it would never end. Mile after mile,



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Fig. 385. The fair at Nizhni Novgorod. For centuries, people have met here for several weeks each year to do their buying and selling.

day after day, from Poland to the boundary of Asia, it is the same flat, bitter cold expanse of snow, dotted all over with sleepy little villages. If you crossed it in summer you would think that there was no end to the fields of rye, oats, barley, and potatoes. Russia is a big country.

Near the Gulf of Riga, a great deal of flax is grown for shipment to other countries. (Fig. 337.) In the south, you remember, a great deal of wheat is raised. Before the World War, Russia exported more wheat than any other country. This is not only because Russia grows so much wheat, but also because the Russian people themselves eat rye bread so that they can sell much of their wheat. They do this because they can get more money for wheat than for rye.

Near Kief, many sugar beets are grown; but the fields there do not yield as much as the beet fields of Belgium or Germany, where there are better methods of cultivation.

In southeastern Russia, near the Caspian Sea, the country is like parts of our Plateau States, too dry for farming. Here we find level pasture plains called steppes, over which the Russian cowboys, or Cossacks, drive their flocks of cattle and sheep. These cowboys are the finest riders in the world. Many of them served as soldiers in the Russian army, and the people fear them very much.

400. Minerals.—Russia does not have as many minerals as Spain or the United States. However, gold and a still more precious white metal, platinum, are mined in the Ural Mountains. The Russian oil fields on the Caspian Sea were for years second only to those of the United States. There is a pipe line for this oil from Baku on the Caspian Sea, to Batum on the Black Sea. There is some coal near the Black Sea, but since the people are so ignorant, there is very little manufacturing.

401. Foreign trade.—At present, Russia is like Argentina, or Nebraska, an agricultural country. It has long sent food and raw materials to the countries in western Europe and received manufactures in return. Most of the trade goes through Leningrad (Petrograd) and Riga on the Baltic, and Odessa and other ports on the Black Sea. In winter, when the Baltic



Photo. Brown Bros., N. Y.

Fig. 386. The old winter palace of the Czars, Leningrad (Petrograd). The Czar and many of his friends lived here.

freezes, some Russian trade goes through Poland and Germany.

402. People and government.—For many years before the World War most of the Russian people were kept poor and ignorant by their government. The laws were made by the Czar and a few of his friends. There were many cruel laws that oppressed the people very much. If anyone dared to complain and suggest a better way, he was sent thousands of miles away into Asia to a country called Siberia, which is colder than Russia. There these exiles had to live in the woods as best they could. The song called "The Siberian Wail" was not allowed to be sung in Russia, because it is like one long groan in various tones, and, of course, it made people think of the cruelty of the old government. Under the Czars the Russian people had to pay heavy taxes. Tax money is supposed to be used for the good of all the people, but in Russia most of the tax money was stolen by the Czar's friends, so there was little left to be used for roads or colleges or schools. Thus



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Fig. 387. A Russian peasant family, horse, and cart. The wooden yoke is seen everywhere in Russia. On what kind of roads does this cart travel?

you see why the roads were bad and the people were ignorant, poor, hungry, and unhappy. Travelers tell us that they have found the Russians to be a kind and friendly people. There have been many great writers and musicians among those who have been educated. During the World War they fought against Germany and Austria, and millions of them were killed. Then the people had a revolution and set up a republic.

The Russians, like most other people, want to have a good government that will give justice to all the people, so that they can go to work and have better crops, better roads, better houses, good schools, and a much happier time than they did under the Czar. The people of western Russia are not the same race as the other Russians. After their revolution they wanted to be independent. So they set up three new states called the republics of Lithuania, Estonia, and Latvia. They all lie in the great flat plain of Russia (Sec. 396), and most of the people live by farming.

QUESTIONS

1. Which rivers of Russia flow southward? Why are they more useful than those flowing north? 2. Find in the Reference Tables, the longest river in each continent, its length in miles, the water into which it flows, and a city on it. Arrange them like the model:

GREAT RIVERS OF EACH CONTINENT.

RIVER.	LENGTH.	CONTINENT.	BODY OF WATER.	CITY.

3. Would life be easy or hard for you in the house in Fig. 383? Why?

4. Why is farming the chief occupation of Russia? Locate the great agricultural belt. Name its products. 5. Of what parts of North America would a journey southward across Russia remind you? 6. Compare Russia in size and population with the United States. Why has it as much farmland as we have? 7. Why do the Russians do so many things by hand instead of by machinery? 8. List all the resources of Russia you can.

9. On what parallel of latitude is Leningrad (Petrograd)? Where in North America is this parallel? 10. Why is the harbor of Odessa more important to Russia than that of Leningrad (Petrograd)? 11. Why is Hudson Bay not as important commercially as the Gulf of Mexico?



Photo. Brown Bros., N. Y.

Fig. 388. Russian peasants (moujiks) in winter clothing.

12. Which is better supplied with waterways for ocean steamships, the United States or Europe? 13. How has the United States made a short water cut from her wheat country to Europe? 14. How would better roads improve the condition of the Russian farmers? 14. Find out something about the good, strong qualities of the Russian people. Some of them are great musicians. If you have a public library where you live, with the librarian's help find the name of a great Russian musician or writer.

GENERAL VIEW OF EUROPE

403. A small, wealthy continent.—We have been reading about the various peoples and countries of Europe, most of which are no larger than some of our own states. What about the continent itself? It is the smallest of all the continents, except Australia. But it is a very rich continent. In no other continent is so much of the land good for growing things that men need.

More than one-half of Canada is too cold to grow food for many people, but only a small part of Europe is too cold for farms, and only a small corner near the Caspian Sea, in Russia, is too dry for farms, and where irrigation is necessary for crop-



Fig. 389. A street in Chichester, England. Many cities in Europe still keep some of the gateways in the wall that once upon a time surrounded the whole town. Strong gates kept out the enemies.



© Underwood & Underwood, N. Y.

Fig. 390. On the continent of Europe one often sees wooden shoes, which the peasants wear much as we wear overshoes. These people live near Brest.

growing. Nearly one-half of the United States—all the western part—is either mountainous or so dry that crops can be grown only where there is water for irrigation. Few people can live in this dry part.

The wheat map of the world (Fig. 90) shows that the wheat area of Europe is larger than the wheat area of all North America.

404. Climate.—The climate of Europe is good almost everywhere. Most of South America is too hot and unhealthful for men to thrive in, and some parts of the United States are too swampy to be as healthful as they ought to be. But there are very few spots in all Europe where the climate is not good and healthful. This helps to make strong people, well able to work—

people who want to do things. The boys and girls in much of Europe play active games; the men like to take long walks, hunt, climb mountains, and explore unknown places. It was an Englishman who climbed the highest mountains of South America. It was an Italian prince who climbed the highest mountains of Africa. A Scotchman, Livingstone, explored Central Africa. A Norwegian and an Englishman went to the South Pole. A Norwegian flew over the North Pole in an airship. The people of Europe settled North America, South America, South Africa, and Australia. They did all these things because the good climate of their continent helped to make them strong, healthy, active, and industrious. They have written more books than all the rest of the people of the world.

405. Surface.—The surface of the land in

Europe suits man better than does the surface of North America or that of South America. North America has a large area of high plateaus. Most of Europe consists of low plains, which are much more useful than rougher, colder plateaus would be.

Most of the mountains of Europe, which are in the southern part, are not long, solid walls as they are in South America. Let us look for the mountains of Europe. The physical map (Fig. 355) shows that there

are high mountains in the northern part of Spain. You will notice that these mountains end at the Mediterranean Sea, and we have the valley of the Rhone River in France before we come to the next mountains, the Alps, with snowy tops and glaciers. To the east of the Alps are the Balkans. East of them lies the Black Sea, which is an open door for ships to go through these mountains up the Danube River, almost into the heart of the continent. North of the Black Sea is the great, level plain of Russia. Farther eastward we find high mountains again, among them the highest peak in Europe, in a range between the Black



Photo. G. E. Finch, Dillon, Mont.

Fig. 391. A tree-lined road in France, a common sight in western Europe. The branches are trimmed often for fuel, and finally the trees are cut down for lumber.

Sea and the Caspian Sea. But these high mountains do not shut men away from the land, because of the openings.

406. Ease of travel.—It is easier to travel across Europe than across either of the Americas because the high mountains

of Europe are broken into several pieces with passes in between. In the midst of the European mountains are big valleys, so low that canals have been built connecting one river valley with another. For instance, canals connect the river Rhone with the rivers Loire, Seine, and Rhine. Thus boats can go from the Mediterranean to the Atlantic, and to the North Sea by way of the rivers. There are also canals connecting the Danube with the Rhine and the Elbe; so that boats can go from the Black Sea up the Danube through a canal and down the Rhine or Elbe to the North Sea.

Notice that the most of Europe is a great, low plain that reaches from the Pyrenees Mountains through northern France, and on eastward to the Ural Mountains. What bodies of water let ships reach the shores of this plain?

In South Europe are three big peninsulas, around which ships can sail with ease. This is fortunate, for these peninsulas are shut off from the rest of Europe by high mountains on their northern borders.



Photo. Brown Bros., N. Y.

Fig. 393. Curling at Kandersteg, Switzerland. The tourists are amused by games even in winter.

For a long time there was no railroad over the Alps and it was a long crooked climb by wagon road over the top. Much hard work has been done in building roads, railroads, and tunnels through these mountains, so that men and goods can cross the Pyrenees, the Alps, and the Balkans. There are three long tunnels under the Alps. One of them, the Simplon tunnel, connecting Italy with Switzerland, is over twelve miles long.

There are also mountain ranges in these southern countries, Italy, Greece, and Spain, and in the Scandinavian Peninsula.

407. People.—You remember how the white men in North America settled in the east and then moved west until they took possession of all the land from sea to sea. The same thing has happened many times in Europe. In ancient times, several different peoples, traveling with flocks and



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Fig. 392. Swedish women weeding sugar beets. Peasant women do a large part of the farm work in Sweden.



Photo. G. E. Finch, Dillon, Mont.
Fig. 394. Beaumont, France. A bridge built by the Romans. It is nearly two thousand years old. Will all the bridges near your home last as long as that?

herds, moved into Europe from Asia and worked their way across to the Atlantic.

There is not room in a small book like this to tell how all the peoples of Europe came to be there, but you can easily see how the mountains, small valleys, islands, and peninsulas separated the people. As they could not get together, there came to be many different kinds of people speaking many languages.

408. Trade.—Now that men can use ships easily, it is easier to carry on trade in Europe than in any other continent. Look at the map and you will see why. See how many peninsulas there are, and how far ships and boats can go inland. If our Gulf of Mexico went as far into North America as the Black Sea goes into Europe, we could run steamboats up the Mississippi to the wheat fields of Kansas and Dakota. If ocean steamers could go into our Great Lakes, they would be as useful as the Baltic Sea and the Gulf of Bothnia. You remember that steamers bring iron ore, grain, and lumber from the shores of Lake Superior to the Lower Lakes. In the same way, steamers in the Baltic Sea carry iron ores and lumber from Sweden and northern

Russia, and grain from western Russia.

Even the White Sea is of more use to Europe than Hudson Bay is to North America, for ships regularly make trips in summer through the Arctic Ocean to Archangel, a busy port which ships grain and lumber to the cities of western Europe.

Europe does not have as many railroads as the United States, because freight can

be carried in the ships that sail into all these bays, gulfs, and seas, and in boats on the canals. This is one of the reasons why the people of Europe own most of the ships in the world. Another reason



Photo. U. S. Signal Corps
Fig. 395. European peasants must cut most of their wheat by hand because their farms are small and they cannot afford modern machinery. The tool which is being sharpened is called a cradle.

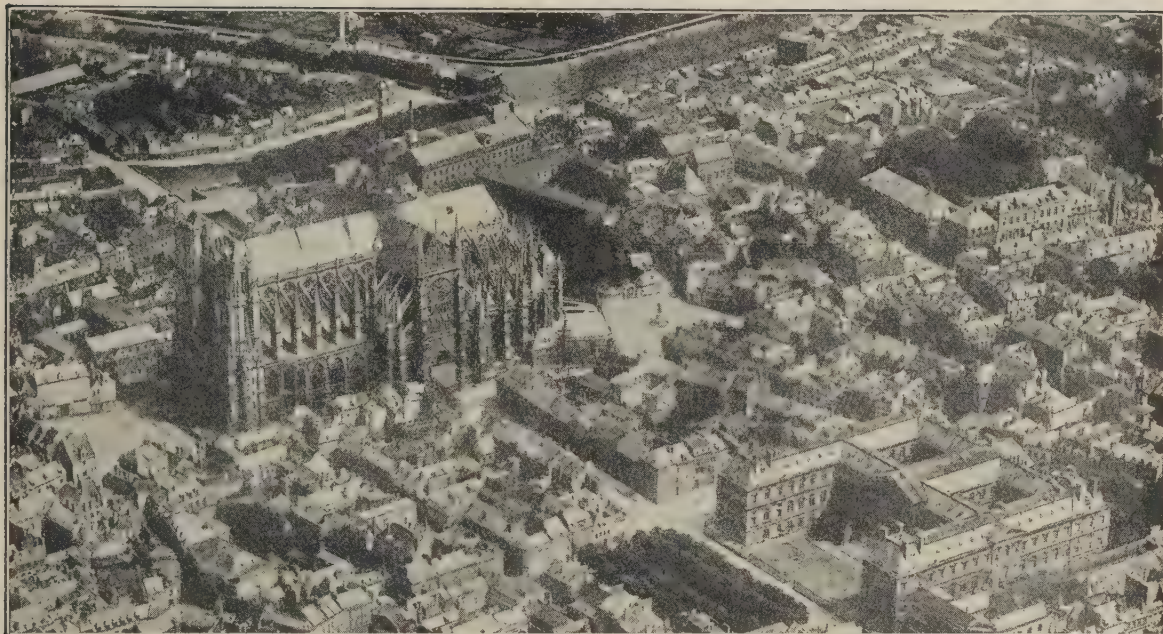


Photo. U. S. Signal Corps

Fig. 396. An airplane view of Arras, France. How many kinds of buildings do you see? What is in the middle of the square in front of the cathedral? Several generations of men worked on the cathedral.

why they have ships is that there are so many people living in western Europe that there is not room enough to grow all the food they need. Therefore, ships must be sent away to other countries to bring back food.

Most of the trade of the United States and Canada is with Europe. Millions and millions of dollars' worth of wheat, corn, oats, and flour, meat, cotton, lumber, leather, oil, and copper go from America to Europe each year. In return Europe sends clothing, silk, jewelry and jewels, toys, and many other manufactured goods. Europe and North America between them control nearly all the foreign trade of the world.

QUESTIONS

1. Why does Europe, which is about the size of the United States, have more people? 2. Compare the populations of Europe and North America. (See Reference Tables.) 3. Why is so much of the population further north in Europe than in North America? (See Sec. 345.)

4. On the commercial map of the world, Fig. 40, find the following routes:

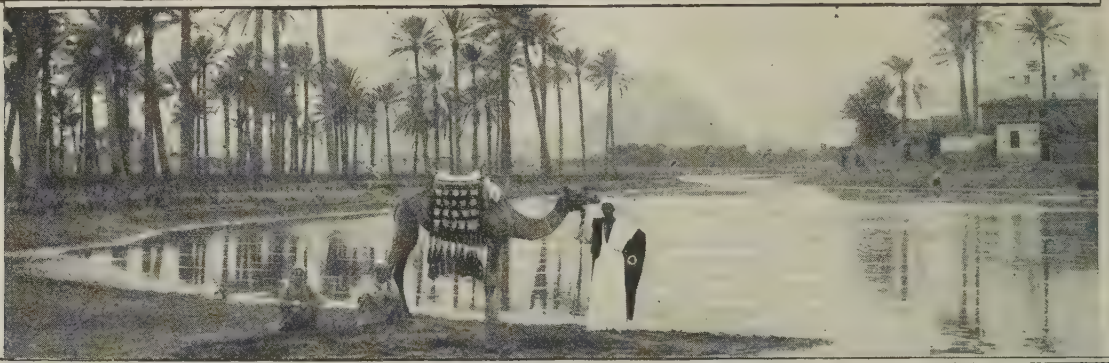
- (a) English cotton cloth to Hong Kong.
- (b) Wool from Sydney to London.
- (c) Rubber from Batavia to Amsterdam.
- (d) Cotton from Galveston to Liverpool.
- (e) Apples from Michigan to London.

5. Name five large states of the United States which are too dry to do much farming without irrigation. Are there any in Europe? 6. Name five in the United States that are too mountainous to support a large population. Which countries in Europe are similar?

7. Copy the following, filling out the lists:

MOUNTAINS.	COUNTRIES ON EACH SIDE.	CHIEF PRODUCTS.
Pyrenees.....		
Alps.....		
Apennines....		
Balkans—		
Carpathians,		

8. Why are there so many languages and peoples in Europe? How many can you name? 9. Did any of your schoolmates come from Europe? 10. Why is New York said to be the largest Irish city in the world? 11. Give five reasons why you would rather live in the United States than in Russia or Turkey.



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Fig. 397. Four of the most famous objects of interest in Africa: the river Nile; the ancient pyramids on its banks; the Arab; and his camel, the "ship of the desert."

AFRICA

THE CONTINENT OF AFRICA

409. The Dark Continent.—Africa is not like any continent we have yet studied. Although in shape it is somewhat like North and South America, being narrowest at the southern end, its highest mountains are on the eastern instead of the western side. (See Fig. 400.) Unlike Europe, its greatest length is from north to south. It also differs from Europe in that it is warmest in the northern and central parts.

A few years ago the maps of Africa had big patches of plain white paper in the middle, to show that no one in Europe or in America knew what was there. Until recently Africa had been shut up like a clam in its shell for thousands of years. White men called it the dark continent, partly because its people are nearly all dark in color, but chiefly because we knew so little about the country.

Why did not the people of Europe explore Africa as they explored North America? Africa was much nearer to them than America was. In fact, Europe almost touches Africa at the Strait of

Gibraltar. You can sail across from Europe to Africa between breakfast and dinner. Why, then, did the people of Europe neglect Africa? One reason is that it is hard to travel far into northern Africa. This is because a short distance from the Mediterranean Sea is the Sahara, the largest desert in the world. (Fig. 31.) This desert has kept men out of the central part of Africa, for it is very hard indeed to cross, as we shall presently see.

You may wonder why men did not sail up the big rivers of Africa, as explorers sailed up the rivers of South America and North America. Boats cannot go up the African rivers because in them there are falls and rapids near the sea. Most of Africa is a plateau from a quarter to half a mile high, and the rivers tumble down from this plateau to the narrow plain along the sea. There are so many fevers and other diseases on this low plain along the coasts of Central Africa that it is dangerous for white men to cross it. Back of the unhealthy coast, there is in Central Africa a

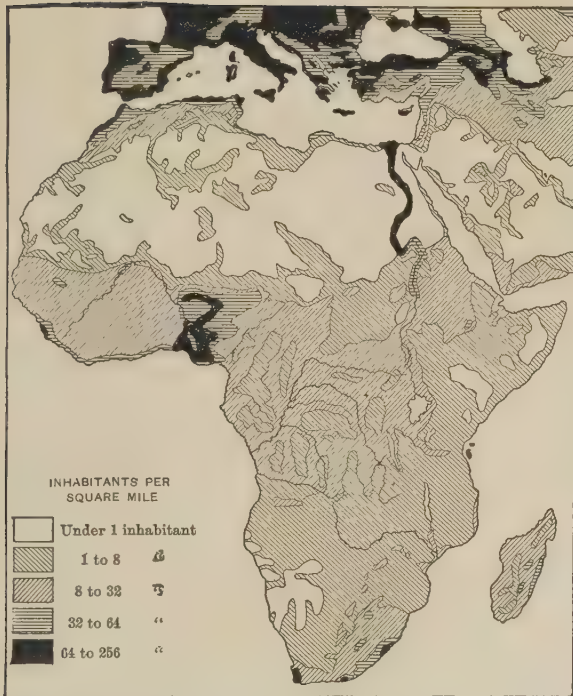


Fig. 398. The population map of Africa shows that, although Africa is the second continent in size, it has only a few places where many people live.

great forest region, a jungle much like that in South America. (Sec. 269.) You remember how difficult it is for the white man to travel through such thick forests, because it is so hot there. Besides there are many fierce wild animals and poisonous insects, and no good roads at all.

There is another good reason why white men did not go into Africa. The people there were dangerous. The Arabs, who are scattered all over North Africa, have been slave traders for many centuries. The roving band who bought the little boy Joseph, away back in Old Testament times, were Arabs from this part of the country, and were just like the Arabs we find there to-day. Before the year 1800, these Arabs of North Africa often captured European and American ships in the Mediterranean Sea, and kept the sailors as slaves. Perhaps some student in the history class in

your school can tell about the American, Commodore Decatur, and his trouble with the Barbary pirates in the year 1803.

The countries of Europe now control most of North Africa, and the slave business has been stopped there, but it still goes on in some parts of Africa where white men do not rule. For a long time, even white men went to the west coast of Africa and bought slaves from the Arab traders, or caught the people themselves and took them as slaves to Brazil, the West Indies, and America. You can now see why the natives of Africa sometimes drove out the white men who wanted to visit their country.

410. We know South Africa.—About the time of Columbus, a Portuguese sailor named Vasco da Gama discovered the

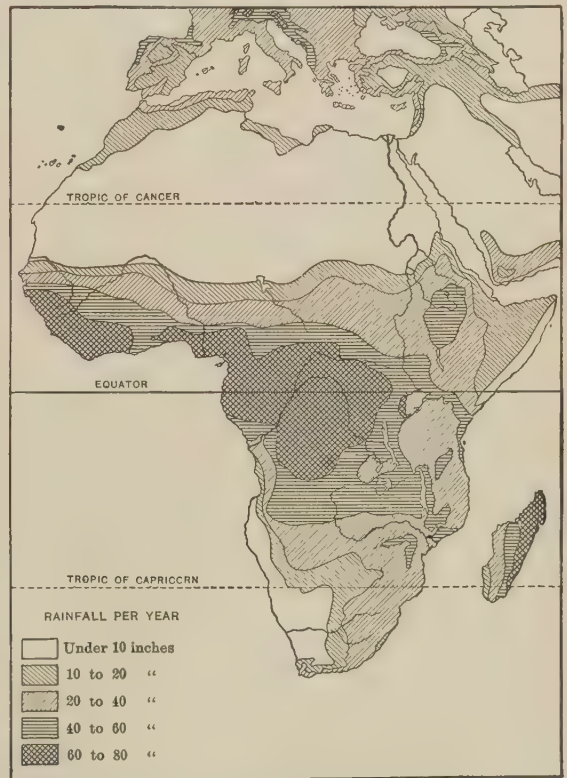


Fig. 399. See if you can tell, by comparing this rainfall map of Africa with the population map, why the same parts of the continent are white on the two maps.

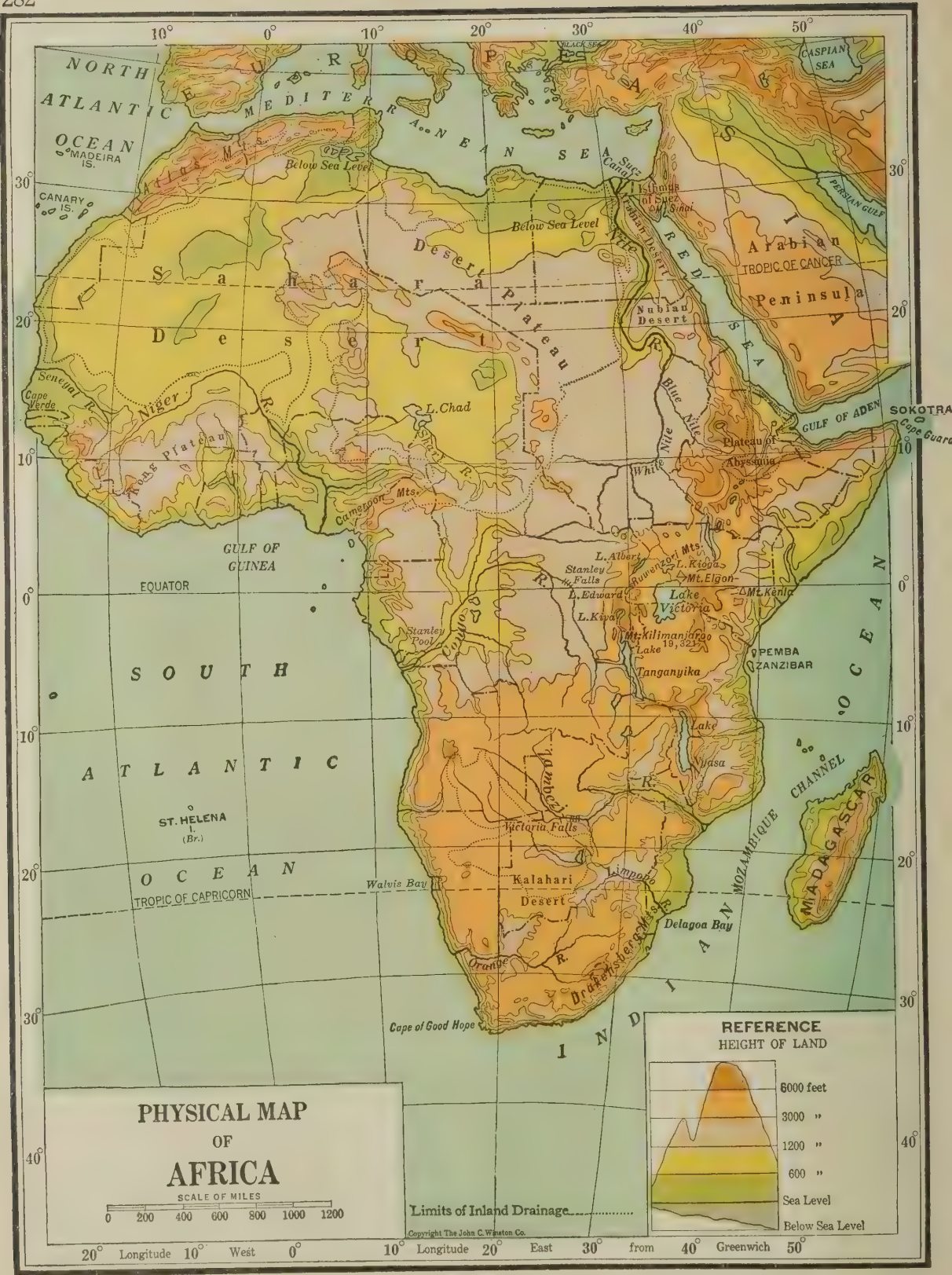


Fig. 400.



Fig. 401. Relief Map of Africa.



Fig. 402. A caravan crossing the great desert of Sahara.

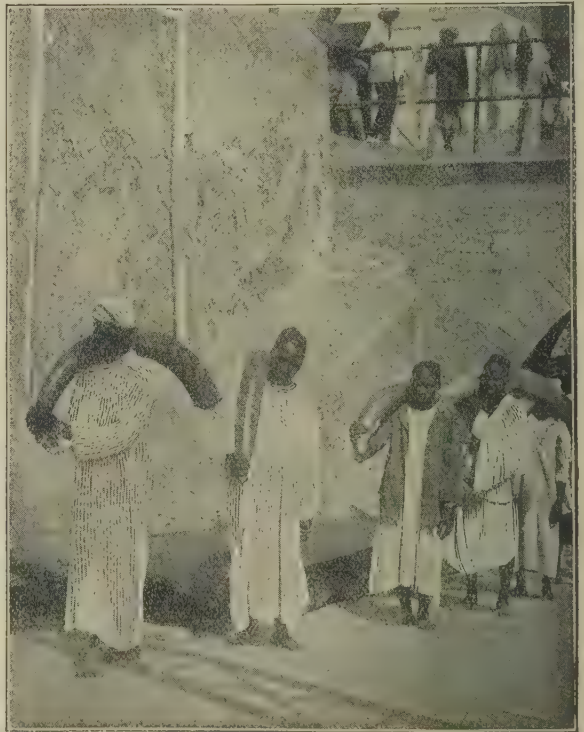
Cape of Good Hope and found a new way to India by sailing around the point of Africa. You can see by the map that the Cape of Good Hope is in the temperate zone where there is some frost. Unlike northern Africa, South Africa had no Arab inhabitants. This made it safe for ships to stop there and for several hundred years ships going from Europe to India stopped at South Africa for fresh food and water. For all of these reasons, it has not been hard for people to know southern Africa well.

The Portuguese were the first people to settle in southern Africa. The map shows that they still have a colony near the southern point of the continent. The Dutch and the English also settled there. South Africa is now a large English colony, but many of the people are still Dutch.

411. Recent explorations.—During the last fifty years, there have been great changes in Africa. Nearly all of the continent has been explored by white men, who now know how to take better care of themselves in the hot countries. We have stopped taking the natives as slaves, because we feel that it isn't fair. A good

Scout wouldn't do such a thing. We have also found that we want to trade with the people of Africa. We want their rubber, ivory, palm nuts, and peanuts. They want many of our things, such as cotton cloth, knives, axes, guns, brass wire, and beads.

412. Railroads and steamboats.—A number of railroads have recently been built in Africa by white men, with the help of the black men who live there. People and freight can now go by train around the rapids and falls of the rivers, and thus reach the upper parts that are so quiet and deep that on them steamboats can



© Publishers' Photo Service, N. Y.

Fig. 403. These natives are carrying ivory to a ship in the harbor of Mombasa, East Africa. (See Sec. 440.) Ivory is used for piano keys, billiard balls, etc.



Fig. 404



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Fig. 405. A baby camel and its mother. Is a camel's foot like a horse's or a cow's?

safely go far into the interior. White men are now running steamboats on the four largest rivers of Africa. There are also steamboats on the three big lakes of East Central Africa.

413. European colonies.—As soon as African trade began to be profitable, the European countries hurried to grab land in Africa. In a few years the different countries of Europe took possession of most of Africa, as the political map (Fig. 404) shows. At the capital of each of these colonies, there is a European governor. In many of the colonies, however, there are natives who never saw a white man, because they live far back in the forest where there are no roads. These people have always lived in little villages and have ruled themselves.

414. Independent countries.—There are only two independent countries in Africa. One of these is Abyssinia, near the Red Sea. It is a high plateau, where a cool climate seems to have made men so strong and brave that they have driven out all Europeans who have ever tried to rule in

their country. The other independent country of Africa is Liberia, in the forests along the west coast. This country is under the protection of the United States. It was set apart a hundred years ago as a place to which negroes from the United States might go and have their own free country. The climate is so hot that the people there do not feel much like working, and they are not so well educated as are their relatives who stayed in the United States.

QUESTIONS

1. How does Africa compare with North America in size? in population? 2. Is it a very old continent? Why has it only about one-third as many people as Europe? 3. Why did Europeans go to North America in greater numbers than to Africa?

4. What rivers in North America helped the white man to enter that continent? in South America? in Africa? 5. Why is the camel the best animal for crossing the desert?

6. Why is the northern part of North Africa much like southern Italy and Spain? 7. Find on the physical map of Africa (Fig. 400) the highest mountain. 8. Name the lakes in which the Nile rises. 9. Some of the big trees in California are nearly as old as the pyramids. (See Fig. 397.) How old is that?

THE PEOPLE OF THE DESERT'S EDGE

415. Moving and camping.—Hakim is an Arab boy. The day he was ten years old he was riding a camel with his mother, Suleima, and his sister, Suleika. The camel carried many bundles, too, for it is a great burden-bearer. Hakim's family was moving, there on the edge of the Sahara Desert in Africa, in a country called Algeria. Enough rain may fall at some seasons in the edge of the desert to make some grass grow; but for many miles, there may be no spring or stream. In such places it is often much trouble to find water to drink.

Hakim's family was not the only one that was moving. There were four other camels besides the one belonging to Hakim's family, and they were all heavily loaded. Two small donkeys followed behind, with loads that seemed big enough to break their backs. But the donkey is a very strong little beast, well able to carry heavy loads. Everything these people had, except their animals, was fastened on these camels and donkeys. Half a mile behind the donkeys came Hakim's father, Abdallah, driving a big flock of sheep and goats.

Toward evening the party stopped. The grown-ups unloaded the bundles, and commenced putting up tents. Hakim and Suleika and their little friend, Yussuf, started out toward some bushes they saw in the distance, hoping to find enough sticks for a little fire.

416. Desert supper.—In an hour the tents were up and the tasty smell of broiling goat meat filled the air. By the time supper was ready, Hakim's father, Abdallah, had come up with the sheep and goats. Then Suleima took an earthenware bowl and milked four goats. For supper they had milk and meat, and also some barley bread, heavy, and nearly as hard as bones. The only water they had was in a goat-skin water bottle, which they had filled that morning at a pool beside the way.

417. Building a fence.—The next morning, everybody got up early and went to work, for the camp was not yet finished. First of all it was necessary to make fences around the tents, to keep out the camels and goats. The Arabs have a saying that if a camel gets his head into a tent, he goes all the way in. It is true; and a camel fills a tent very full, too. Besides, he may eat up all the flour or meal, and some of the clothes as well. Since the goats are



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Fig. 406. A Bedouin encampment on the edge of the desert. Abraham and Jacob lived like this in camel's-hair tents.

glad to help him eat up things, the first thing the people did was to cut thorn bushes, of which there were many, and pile them around the tents so that the goats and camels could not enter.

418. The Arab chief.—There were five tents in the group, four close together, and one about thirty yards away by itself. That was the tent of Ismail, the head man or chief. He was called a "Prince of the Desert." If the people had any difficulties, they came to him to ask what to do. He had his tent by itself so that people could not overhear the business done there.

419. The day's work.—The Arabs camped here for ten days. There were five men, one of whom always stayed

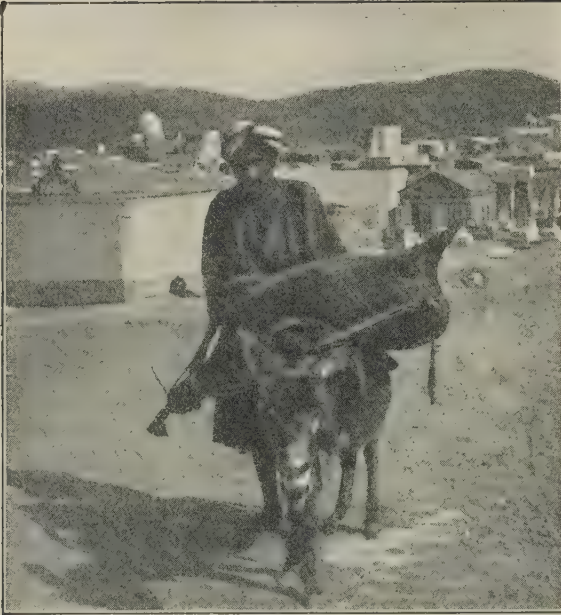


Fig. 407. A goat-skin water bottle on a donkey near an oasis town. Bible people used such bottles.

around the camp. Each morning one of them went off a few miles with a camel and brought back earthen water jars and goat-skins full of water. Another man went out with the flock of sheep, and another with the flock of goats. The fifth man took the camels and donkeys out to graze. All of these animals hunted their living in the scanty grass and coarse bushes.

420. The boys' schooling.—Hakim and Yussuf went with the men to learn how to take care of the animals. That was the boys' only schooling. While the camels grazed, the men taught the boys how to track camels, so that each boy could pick out the tracks of his father's camel from among many camel tracks. The boys had to run races to make them fleet and long-winded, so that they might be able to follow run-away camels. It is a terrible thing to lose your camel in the desert.

Hakim's father taught him to say over some chapters of the Koran, the Arab Bible. Abdallah could not read, but he

knew many chapters of this book by heart, and also knew many stories, of the kind that we read in a book called "Arabian Nights."

421. The girls' schooling.—Suleima, Hakim's mother, and the other women went at their work, too. One of the women sat down with a lap full of wool from the sheep. She took a stick, which she whirled somewhat as we spin a top, and began to spin yarn. Another woman spun goat's hair into a strong rope to be used to tie the camel fast at night. Still another wove striped cloth of camel's hair, to be made into a tent. All their tents were made of camel's-hair cloth. While the women worked the girls helped them, and in this way learned to spin and weave.

After Hakim's mother had spun yarn for two weeks, she began to weave the yarn into cloth for a long, white wool robe, or burnoose, such as all Arab men and boys wear. This one was for Hakim, and she worked hard for a week to weave it. When it was finished it was so strong and firm that it would last for years.

422. The rug.—When Suleima had made all the ropes, sacks, halters, and clothes that her family needed, she began to make something to sell. She had kept the wool of the white sheep separate from the wool of the black sheep. This gave her white yarn and black yarn. She dug up a root and boiled it in a pot. White yarn, soaked in the water in which the root was boiled, became red. Some of the yarn was soaked for three days with some sticks from a desert bush, and became yellow. Some other yarn Suleima dyed green with a very precious powder, for which she had traded two goats and a sheep. She had bought it of some Arabs she had met the year before as they

returned from a distant part of the desert. She now had yarn of five colors, white, black, red, yellow, and green, and she began to weave a rug. She wove into it figures of camels and men and tents and trees. Although the rug was only seven feet long Suleima was six months in finishing it. When it was done, it was so valuable that she knew she could sell it for much money when she reached a town, or that with it she might buy a small flock of sheep, or a couple of donkeys.

423. A life of constant moving.—All of these things were not done and finished in one camping place. Within ten days after the Arabs first made their camp, the animals had eaten all the food that could be found within five miles. In order to get food for the flocks, the family had to move. Again Hakim climbed up on the camel beside his mother. There he rode with all the tents and the bundles. Twelve miles to the north they rode, until they came to some water. There they again pitched the tents and cut thorn bushes and hunted firewood.

In the country on the edge of the desert it is warm and there is no snow, but it rains a little in the winter. This makes some grass grow at that season. There are several kinds of bushes that can live all summer in the blazing sun without a drop of rain. In the winter when it rains, grass and water are found in places that are entirely without water in the summer. In such places the Arabs pasture their flocks and camp in the winter. Then, as spring comes and the rains stop, the grass withers and dies, and the desert people go north toward the Atlas Mountains and the Mediterranean Sea to find grass and food. Find these mountains and this sea on the map of Africa.

These people can never stay long in one place, because grass for the sheep, goats, donkeys, and camels is so scarce that they soon eat up all there is in one place. The flocks and their owners must therefore keep moving. For this reason, we call them nomads. The people in many dry countries are nomads.

The nomad Arabs of North Africa are called Bedouins. Hakim and his family are Bedouins. Their only wealth is flocks and herds and the things they can carry when they move. No one ever has a piece of land for his own, except while he camps on it.

424. The barley crop.—At the fourth camping place, Hakim and Abdallah came to the tent of their friend Selim. They had left him there in November when they started south with the coming of the rains. You see, enough rain falls in this part of Algeria in most years, to make a crop of barley, though it is a poor one. Barley is a kind of grain very much like wheat, except that it will not make soft, light bread, and does not need as much rain as wheat needs. It is grown in many dry countries.

Before the Arabs had gone south, they had harnessed the camels to wooden plows. These plows were really nothing but crooked pieces of wood. With them, the Arabs managed to scratch up a little ground in which to plant some barley. Selim and his family camped by the field all winter. They had two watch dogs, to keep other people's sheep, goats, and camels from eating up the young barley plants. The barley belonged to all six families of this little nomadic tribe. While Selim stayed there and took care of the barley crop for the tribe, the others took his flocks along with them in search of pasture.



Photo. Doubleday Page Syndicate

Fig. 408. Moving day in the desert. See the goat's-hair grain sacks and the stone jars on the camels. What else can you see?

The tribe came back north in time to help Selim harvest the barley. There had been no bread to eat for two weeks before they returned; so, the very first morning, Suleima and another woman went out and pulled a blanket full of barley heads. These they spread out on a smooth, hard piece of ground, and beat the grain out with sticks. Within an hour they had ground enough grain between the two stones of the hand mill to make a barley loaf, and they all had bread for supper. The donkey and the camel were very grateful to have the barley straw for their supper. They thought it was a good change from twigs and leaves and tip ends of thorn bushes.

425. Burying the barley.—For a few days, everybody was busy harvesting and threshing the barley, of which each family had three big camel's hair sacks full. That was more than the camels could carry, along with all their other load. What should they do with the barley? They had no house, and they had to keep moving all the time. The only thing they could do was to hide the sacks of grain. After drying the barley well by spreading it out

on blankets in the sunshine for several days, Abdallah, Suleima, and Hakim worked all one night hiding part of it. After dark, they put two full sacks on the camel, led him off to a secret place, dug a deep, bottle-shaped hole, lined it with six inches of straw, put in the precious barley, covered it with straw and earth, and carefully carried away in blankets all the earth that was left, so that no one could find their

store. In the morning, they were back in their tent, as though nothing had happened. No one knew their secret. The next fall, as they went south again, they would dig up the barley, safe, sound, and dry. In this way they would have a good supply of barley for seed and for their winter bread.

426. The visit to town.—After the barley was harvested, our nomad campers, now increased by Selim's family, went roving on to the northward, always seeking pasture. After a while they came to a town and a railroad that the French people had built. The French rule most of Algeria. In this railroad town, the nomads sold some sheep and wool, and Suleima sold her rug. With the money they bought rifles and cartridges, knives, beads for Suleika, and many other trinkets. Suleima wanted a teakettle and tin dishes, because they are useful articles and light to carry. After much talk Selim bought a little phonograph and some records, made in New Jersey. These were not easy to carry about in the desert, but Arabs dearly love music, and the family rejoiced at having enough money left over

to pay for the new treasure. Hakim has been such a good boy and had worked so well at helping tend the sheep, that his father delighted him with a present of a tin watch. Soon the family started away again for another year of tenting in many places, and of living from their flocks and herds.

QUESTIONS

1. What would you take camping that Hakim or Suleika could not have in their tent? 2. (For the boys.) Imagine you are Hakim or Yussuf returning from your day's schooling with the men. Write the events of the day. Pretend you tracked a camel that strayed away. 3. (For the girls.) Imagine you were Suleika, and that Abdallah, your father, had given you a baby camel. Pretend you had woven a gay little blanket like the one in the picture (Fig. 397), and that you had strung some bright beads for his neck. Write what you would tell your brother about it. 4. Why does the desert dweller carry water in goat skins?

5. Study the dress of the Arabs standing by the tents (Fig. 406). What weapons has one handy? Where is he carrying his ammunition? Why must he go armed? 6. When David cared for his father's sheep on the hills near Bethlehem, in what did he wrap himself at night? What do the Arabs call this garment? (Sec. 421.)

THE COUNTRIES OF NORTH AFRICA

427. The southern shores of the Strait of Gibraltar.—Like southern Spain and southern Italy, North Africa, north of the Atlas Mountains, has enough rain in winter for the farmers to grow wheat and barley in some sections. In other places, there are large olive orchards, from which olive oil is made, as in Spain. Many of the people of this country are Arabs, but many French, Italian, and Spanish people also live there. This land is in the temperate zone.



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Fig. 409. A glimpse of a nomad family near their tent in one of the palm groves of an oasis.

South of the Atlas Mountains is the desert's edge—the country of Hakim and the nomads, a land of little rain, little grass, and wandering tribes of people. It reaches from the Atlantic Ocean to the Nile River, on to the Red Sea, and even on beyond the Red Sea to Arabia in Asia.

Look at the map (Fig. 404) and see what countries own colonies in North Africa. Parts of Morocco are still independent, but France and Spain are both taking some parts of this country that they may rule it.

428. The desert.—South of Hakim's country is the Sahara, the largest of deserts. Hakim wants to cross the great desert when he grows up. You would not want to do that, for it would not be a pleasant nor a safe journey for you. People who cross this desert must travel for hours over bare, dry clay, baked almost as hard as a floor. At other times, they must pass for miles and miles over bare rock, so hot under the blazing sun that it would cook an egg almost as quickly as a hot frying pan does. The hot winds blow away every grain of sand or dust that comes loose from the stones. Most of the way across the desert there is sand, sometimes

piled high by the desert wind, or stretching away in little wavy piles like the ocean, as far as eye can see. Hakim is used to this kind of country and climate, but you would not think it a pleasant place.

429. Crossing the desert.—Men could not cross this desert without the help of camels, which are often called ships of the desert. These animals have lived in dry countries so long that they are able to carry men and goods across the desert for several days without eating or drinking. Then, too, they can make a good meal of the twigs of the desert thorn bushes. It is wonderful that there is an animal that can get on so well in such a hard situation.

Sometimes there are terrible sand storms in the desert. Clouds of dust and sand as large as thunder clouds sweep down upon the travelers. The men tell the obedient camels to lie down, and sometimes the poor beasts even stick their heads into the sand. The men lie beside the camels and cover their heads with cloths to keep out some of the stifling sand and choking dust. Here both men and animals must swelter, sometimes for hours, or even for a whole day, before the hot rain of burning, yellow dust stops. Sometimes it kills people.

Sometimes the dust covers up the trail and the travelers lose the way to the

springs or wells that mark the road across the desert. If one is lost in the desert, he dies of thirst. Thus the man who crosses the desert must know the road well.

Fierce robbers sometimes attack travelers in the desert, for there can be no policemen in such a place. For protection, travelers go in large numbers, often fifty

or even several hundred together. Such a body of people is called a caravan. These caravans take cloth, metal wares, and beads into Africa, and bring back to the Mediterranean ports ivory, ostrich feathers, skins, and fine leather. These they get from the tribes south of the desert.

430. The oasis.—

The best parts of the desert are the oases. An oasis is a place in a desert where there is water. It is a welcome sight for the thirsty men of the

caravan to see, across the glaring sand, the dark green tops of palm trees growing where a spring brings water to the surface of the desert.

Whenever the nomads find a spring of water, they plant date trees, and some of them settle down, build villages, and live in one place as we do. Their one-story houses, made of sun-dried brick, have flat roofs, and are always built out in the desert, so that they will not occupy any of the land that becomes so precious when irrigated. (Fig. 412.)



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Fig. 410. When the Nile overflows its banks. What king mentioned in the Bible ruled in Egypt?



Photo. Brown Bros., N. Y.

Fig. 411. In a date-palm garden. In what part of Africa do you think this garden is?

These Arabs of the oases live largely on dates and the other things that will grow beneath the date trees—apricots, olives, beans and other vegetables. There are also little patches of alfalfa, which the Arabs cut and carry to the milch goats. Sometimes these goats pasture on the bushes of the surrounding desert, along with the flocks of the nomad Arabs, who do not own any of the precious date gardens, and who, you remember, live almost entirely on meat and milk. The nomads often come into the oasis towns and trade goats, sheep, camels, wool, or skins for dates, vegetables, and hay. In the cool of the morning, the market beside an oasis village is a lively and interesting place. At noon in the heat of the day everyone is taking a nap. In the cool of the evening, they are all busy again, chatting, walking to and fro, and carrying jars of water, listening to story tellers and the playing of music.

Hakim often visits oases, for there are many big springs along the south slope of

the Atlas Mountains where Hakim's people follow their flocks. Sometimes dates from these oases come to the United States. Farther out in the desert, the oases are smaller, sometimes having only a few date trees around the spring.

Would you like to visit an oasis and see a long camel caravan come in across the sands? Would you like to hear the Arabs tell how narrowly they escaped from sand storms and robbers, and how they lost the water bottles, and how, in the end, the camels brought them safely through?

431. Egypt.—Egypt is the largest oasis in the world. It is a long, green strip in the brown desert. (Fig. 31.) The strip is green because the Nile, flowing in from central Africa, brings water which makes irrigation possible. This makes green fields and green trees.

You can stand on a bare, dry, brown hill on the east side of the Nile and look across a mile or two of green valley beyond which are bare, brown hills again on the west side of the flood plain. The narrow green strip is full of people. In it one village almost touches the next one. To the west



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Fig. 412. An airplane picture of El Oued, Algeria, on the edge of the desert. To keep the wind-blown sand from covering the palm trees, the people carry it away in baskets and heap it up in these circular piles.

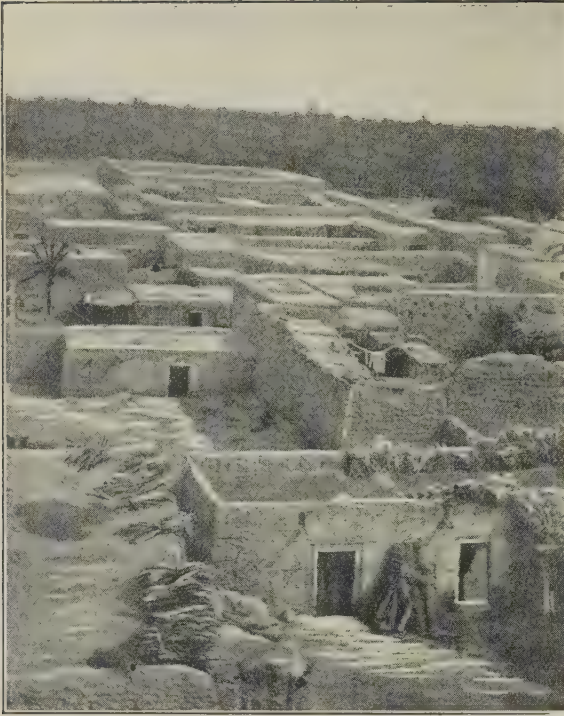
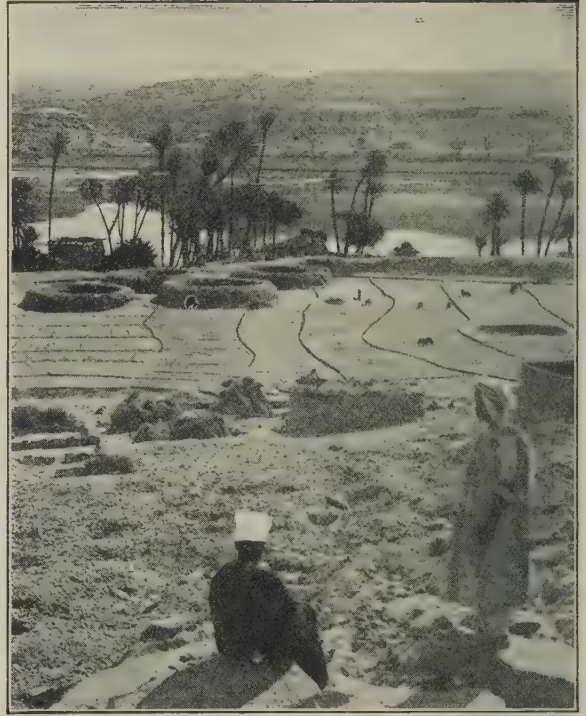


Photo J. Russell Smith

Fig. 413. A near view of the one-story houses of an oasis town. Palm trees appear in the background. Why are the houses without shade?



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Fig. 414. Some circular threshing floors in the little fields beside the Nile. On the farther side of the river, the stony desert is seen. What kind of trees do you see?

of this green strip, for hundreds and thousands of miles, lies the empty desert, where no one lives except in the oases, and which a few men cross at the peril of their lives. On the east the desert reaches to the Red Sea, and beyond this sea is another dry country, Arabia. (Fig. 31.)

It is easy for men to irrigate the valley of the Nile. Each year there is a season of heavy rains along the headwaters of the river in Central Africa. This makes the river overflow its banks, and flood the level plain on each side. A thin layer of very rich earth is left when the muddy water has gone down. This fertilizes the plain better than the best of fertilizers that we make in our factories.

As the floods go down, the men of Egypt wade in the shallow water, sowing wheat and barley. The seed falls into the water

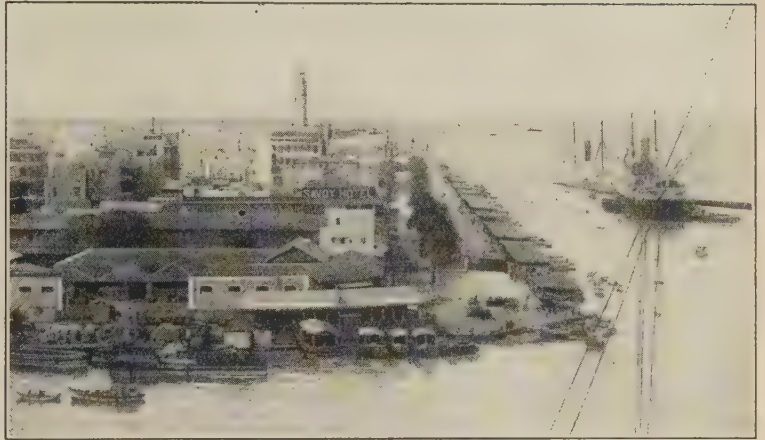
and settles into the mud. As the water dries up and soaks into the earth, the seed sprouts. The young grain grows in the damp earth and ripens into a good crop in the blazing sun. On this account very many people can live in the oasis of Egypt. (Fig. 40.) The largest part of this oasis is near the mouth of the Nile, where the river spreads its many mouths over a wide delta. (Fig. 415.) What other rivers with deltas have you studied?

432. Ancient empires.—The Nile delta is a fine place for men to grow crops and it is rich with fields. For thousands of years, the Nile valley has been green with fields that have fed millions of men. Wheat ships from Egypt helped to feed Rome in the days of that empire 2000 years ago. But even long before the days of the Roman Empire, 4000 years ago,

the Nile valley produced rich crops. At that time kings, called Pharaohs, ruled in Egypt, and built cities, temples, and great pyramids. Pictures and writing were painted and carved on the walls of many of these buildings, some of which still stand. After years of study, men have learned how to read these writings, and from them to know the history of Egypt.

Thus we have learned that in those ancient days the Egyptians had books and libraries, and a regular mail by camel train to Babylon. Do you know some Bible stories about Moses, Pharaoh, or Joseph, who lived in this country long ago?

During all the centuries since, the river



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Fig. 416. A view of Port Said and the Suez Canal.

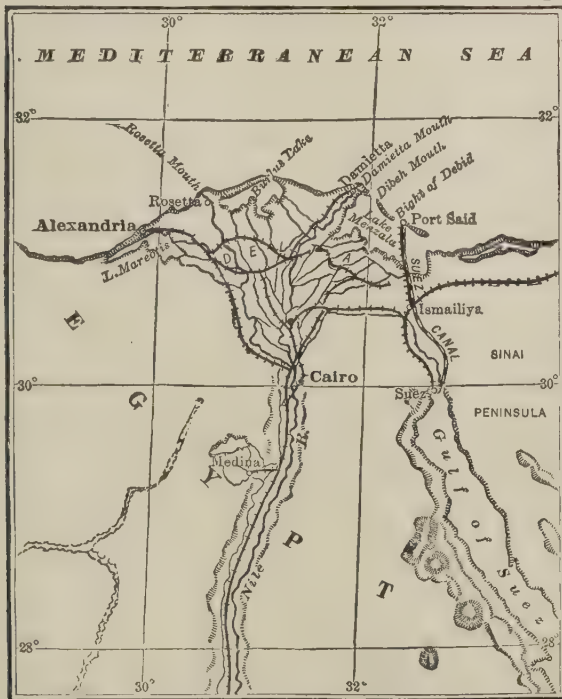


Fig. 415. Map showing how cities and railroads have been built on the Nile delta. See the towns Port Said and Suez at the ends of the Suez Canal.

Nile has carried much freight. The current carries boats downstream to the northward. When sails are hoisted, the northeast wind blows the boat upstream against the current. Today the Nile boats are as busy as they were four thousand years ago. However, there is this difference. Today most of the boats are steamboats, and the men who run them are Egyptians, not Romans, for Egypt is an independent kingdom.

433. Egypt today.—When the Roman Empire ruled Egypt, the Romans took the Egyptians' wheat as tribute, and sent it to Rome. That was cheating, not trade. Nowadays the English and other European traders buy their cotton and early vegetables from the Egyptians, and pay for them with coal, cloth, machinery, or other manufactured goods.

The natives of Egypt are called fellahs. They are big, strong, black people who make their living by farming. They raise wheat, corn, rice, beans, millet, and vegetables. The English have built a dam across the Nile at Assuan. This holds back the flood water, so that the people can irrigate more land and raise two or three crops a year.

Steamers of many nations stop at Alexandria, the great port of Egypt. Travelers often leave the ship there, going up to Cairo, the capital, by railroad, and thence over to Suez, where they can meet their ships again, on their way to India or the Far East. Cairo is the largest city in Africa.

No other country of North Africa is so lucky as to have a river Nile. That is why Egypt has about as many people as have all the other African countries north of the Sahara put together.

QUESTIONS

1. What city in the United States is on the same parallel as Cairo, Egypt? How are the locations alike? Compare the rainfall of these two cities on the rainfall maps of North America and Africa. 2. Why does the Nile, although flowing through a desert, overflow its banks? 3. In what season are there floods on the floodplain of the Mississippi? 4. What country is on the delta of the Rhine? What city on the delta of the Volga? What city near the delta of the Po? 5. Name and give the capital cities of the countries of Europe and Africa bordering the Mediterranean Sea.

6. Name the largest oasis in the world. What are the occupations of the people living there? the chief product?

7. Write a story about desert life. Call it "Buried Treasure." Pretend you are Hakim or his father and that you found the hidden barley had been stolen. 8. Compare the houses in the oasis town (Fig. 413) with the mountain houses in Switzerland (Fig. 393). Why is the roof of one flat and of the other sloping? Of what material is each made? Why? 9. Can much or little of the desert on either side of the Nile be irrigated? On what will this depend?

CENTRAL AFRICA AND ITS PEOPLE

434. An African forest village.—Bong and Rita are a black boy and girl who live in the great forest of Central Africa. Their village of thirty houses is on a small stream that flows into a river which is itself a branch of a great river called the Congo.

There is no winter in their country. The weather is always hot. The children there do not wear clothes, because they do not need them. Bong's father's house is just like every other house in the village. It is round, with a round roof shaped almost like the half of a ball. Such houses are easy to make. The children's father, Taree, and their mother, Tarita, with the help of Bong and Rita, built the house in a few days. First, they went into the woods and brought back some long straight poles. These were stuck into the ground a foot apart. The wall was made by weaving long palm leaves basket fashion in and out among the poles. The ends of the poles were then bent over and tied together with pieces of wild climbing vines. This made the rafters. They were covered with a frame-work of smaller branches to which long bundles of grass were bound. When it rains, this grass or thatch turns the water just as shingles turn the water on our own roofs.

To make a bed, four sticks with prongs on their upper ends are stuck into the ground. Two long, straight sticks make the sides. Across these, shorter sticks are laid to make slats. Then comes a mat of grass to serve as a mattress. The mats are made of grass of different colors. For beauty, many, many hours were spent making other grass mats to ornament the walls. Even the vines they tied on the roofs were so placed that they made ornamental figures on the ceiling. How different their house is from the one that Shoo-ge-ging-wa and her brother Okuk live in.

435. Their gardens.—Near the village, the trees of the forest have been killed by fires built around their trunks. In the clearing thus made are many banana plants, peanuts and vegetables. Every-



Photo. Brown Bros., N. Y.

Fig. 417. A few of the grass-roofed houses in a native village in Central Africa.

body in the village likes bananas, as do millions of other black people in Africa and millions of white people in other countries.

When supper time comes, Taree takes a little piece of meat, wraps it up in a leaf, goes out to a banana tree, and with a sharp stick pins the meat fast to the banana tree. He has now paid the tree for a bunch of bananas which he is about to pick from it. He would be very angry if anyone said that he took things without paying for them. He then cuts off a bunch of bananas, and takes it to the house. Tarita, his wife, digs into a pile of ashes and finds in the bottom a few live coals, upon which she heats some stones. Taree and Tarita are very careful to see that the fire never goes out; it is a great deal of work to start a new fire, for they have no matches. Fire must be made by drilling a stick into a block of soft wood until it gets hot enough to burn. Tarita cooks some of the green bananas in a wooden pot, the water in which has been heated by dropping the hot stones into it. The wooden pot is carved with figures of bananas on the outside, for the Africans have a deep feeling for decorative beauty.

Bong and Rita now return from the forest with a quart of big, fat, white worms an inch long. These are the larvae, or grubs, of a large beetle that lives in the ground and in rotten logs. The children got them by poking sharp sticks into old stumps and rotten logs where the grubs live. Tarita roasts the grubs in the coals of the open fire, and the family has a fine African supper of boiled bananas and roasted grubs.

436. Fish and honey.—The next day they want some fish. Rita ties a piece of meat to a strong string of twisted palm leaf fibers, and carefully drops it into the stream that runs beside the village. Soon a big fish comes along and swallows the chunk of meat. Rita pulls him up quickly to the top of the water, and Bong drives a sharp, wooden spear through him, and



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Fig. 418. African natives ready for war.



Photo. Brown Bros., N. Y.

Fig. 419. Native African iron workers. One man pushes the crude bellows to fan the fire, while the other hammers the red-hot iron. They knew how to make iron before they ever heard of white men.

throws him out on the bank. The fish is big enough to feed the whole family even after the best of it is given to Tambo, the head man, or chief of the village. Tambo is their king.

They also give Tambo a wooden pot of honey. When Bong and Rita were hunting for grubs, they saw wild bees going in and out of a little hole far up in the top of a tall tree. The children told their father about it, and he put a rope of raw hide around the tree and around himself, and walked up the bee tree almost as fast as you walk upstairs. When he came down, he brought enough honey out of the bees' nest to fill three wooden pots. One of these he gave to King Tambo, one he kept for the family to eat, and one he placed at the foot of a very large tree in the forest. This is the tree that the family worships, and often they give it pots of honey and bundles of food.

437. The antelope.—When everybody is tired of eating grubs and fish, Taree goes

hunting. Before he goes, he puts on a necklace of leopard claws for good luck. Then he takes a strong spear, the iron head of which the village blacksmith had made from iron ore that he had smelted in a little clay furnace. Taree starts off into the forest before daylight. After two hours, he finds the tracks of an antelope, an animal something like a deer. For two hours more he follows these tracks, until at last he catches sight of the antelope. In another hour he has managed to creep up close to it, and he throws his spear and kills it. He pats his right arm because it threw the spear so well, and grins with pride.

On the way home with the dead antelope, Taree is thinking of how much meat his family will now have to eat; of how the dried antelope skin will make a nice soft sleeping mat to be used when traveling through the forest.

438. The white man comes.—When Taree gets back to the village, he sees the people standing around in groups, talking. A runner has come down the path from the next village to bring the news that the white man is coming, that he has no toes (he wears shoes), and that he is a mighty



Photo. Brown Bros., N. Y.

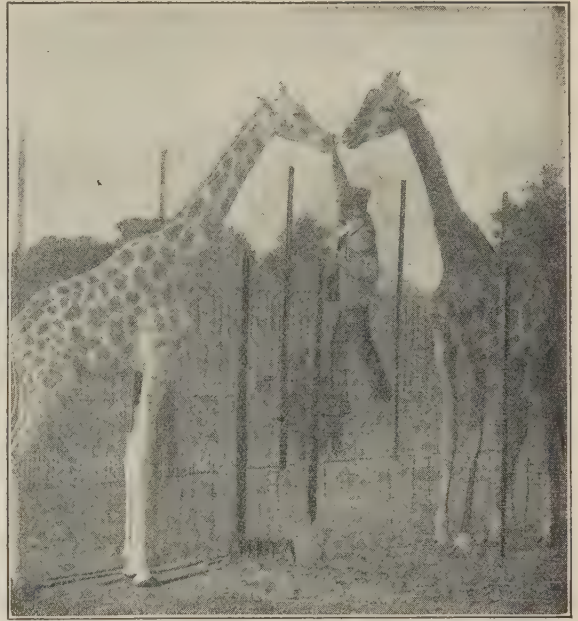
Fig. 420. Natives of Central Africa weaving baskets from wooden splints. This shows how threads are placed to make cloth.

hunter who kills animals with a terrible "bang" noise. They had heard three weeks before that a white man was coming. The news had come more than a hundred miles, by drum taps from village to village. Old Gado, the drum tapper of Tambo's village, is next to the king himself in honor among the people. He is the only man there who knows the secret drum language he learned from his father. By long taps and short taps on the big bass drum and the little tenor drum, he talks at night to the other drum men miles away through the still forest.

Everyone is greatly excited over the news of the white man, and nobody does anything but watch and talk until at sunset the white man comes. He is followed by twenty-five strange black men carrying bundles on their heads. Neither horses, nor cattle, nor donkeys can live in this forest because of the sting of an insect called the tsetse fly. Therefore, men must carry the burdens. These twenty-five carriers who travel with the white man are called porters. The white man is an American, and has come to Central Africa to collect birds for a museum in New York.

The American and his porters are hungry. Tarita builds a big fire to roast Taree's antelope. The strangers eat it all, and pick the bones clean. Afterward they split the bones open and eat the marrow. The white man gives Taree a handful of beautiful glass beads, red and yellow and green, enough of them to make a chain to go around the neck of every member of the family. Each one feels as rich as you would with a new bicycle.

The next morning the white man goes into the forest to hunt birds. He is surprised to see how much Taree and Bong



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Fig. 421. The African giraffe can eat leaves from high trees. Can the elephant eat leaves from high trees?

and Rita know about the birds. The children have often gone with their father in the forest. That is their school. They know every animal in it. They know every bird, and where its nest can be found, and at what time of the day it is to be seen. The American is also surprised to find that Taree can hear and see the birds better than white men can, and can shoot them with his bow and arrow as well as he himself can with his gun. Bong and Rita can shoot them, too, for they have played by the hour with bows and arrows. Rita is the champion of all the village girls at arrow shooting. Sometimes she can even beat Bong.

While the party is standing watching some birds, a leopard springs from the branch of a big tree, right on to the back of the porter who is carrying the white man's extra gun. A leopard is a big cat, somewhat like a tiger. He is about five feet long. The American shoots him in



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Fig. 422. A zebra family, cousins of the horse. Which could hide more easily in the forest, a zebra or a horse?

a second, but it is too late to save the porter. His neck has been broken by one blow from the leopard's paw.

The white man carefully skins the birds they shoot, so that he may show the people in his country what the birds in Africa are like. At the end of three days, he goes on down the river. Before he leaves, he gives to the people who have helped him presents of beads, red handkerchiefs, and brass wire. They consider this wire fine jewelry. Rita and Bong, as well as their father and mother, are very proud indeed to have bracelets of brass wire on both wrists, and anklets of brass wire on both ankles.

439. The elephant hunt.—Bong and Rita have done so well at shooting birds for the American, that their father says they are now ready to go with him on the long-promised elephant hunt. Four other families join them for the trip. They go a day's journey into the forest and find the tracks of an elephant. For another day they carefully follow the tracks, and at last hear the elephant breaking branches from the trees as he feeds on tender leaves. Little by little, the hunters creep up in front of the huge beast. Suddenly they let go a shower of arrows into his face, putting out both his eyes.

When they see that they have blinded the elephant, they shout with delight, for they know that he cannot get away. The poor beast runs wildly about against the trees. The natives easily dodge him, awaiting their chance to drive a spear into his heart. When he falls dead they shout and jump and dance. They walk over his big body and slide down

his sides. After a while, they cut off the feet and cook them for their supper. Elephant's foot is a great delicacy.

440. The dance.—The next morning, they go back to the village. All are carrying heavy burdens of elephant tusks and elephant meat, enough for the whole village. That night they have a hunting feast. A big fire is built in the center of the village. Everyone dresses up in his best strips of bark cloth, some of which are dyed red and some gray. They put on hats of feathers and plumes, and stick flowers through holes they have made in their lips and ears. They eat elephant meat and dance around the fire, keeping time to the tapping of arrows against the bows. For hours, they dance and dance.

441. Trading with white men.—Such is the life that still goes on in some of the African forest villages. Some of these villages have no trade with white men, but most of them get our cotton cloth, knives, beads, and wire, and in return send us ivory, rubber, and skins. If the people live near the steamboat lines or railroads, they also send us palm nuts. These nuts contain oil that can be pressed out of them just as olive oil is pressed from olives. Like olive oil and butter, it is good to eat.

During the World War, many shiploads of these palm nuts went to Europe to feed the war workers and soldiers. Steamers from England and Belgium call at many places along the coast of the Gulf of Guinea.

442. David Livingstone.—Central Africa is the part of the continent of which the least is known. Here the great, dense forest extends many days' journey to the north and to the south of the equator. It is not easy for white men to travel here.

The first white man to visit this country was David Livingstone, a Scotch missionary. He traveled for a long time through this unknown forest. He was loved by all the natives who met him. He finally died there of African fever. It is a splendid story of loyalty and heroism. These black men loved him so much that they carried the dead body of their friend through the forest for many months, until at last they reached the coast. This they did in order that Livingstone might be carried back to his own home country in the British Isles for burial.

443. The Sudan.—Look at the rainfall map and you will see that the forest country of Central Africa has much rain, but that north of it and south of it are lands of little or no rain. These lands to the north and south are the deserts. Between the forest and these deserts, both north and south, are wide belts of country where during a part of the year it rains, and during a part of the year it is dry. When it rains, the grass grows; but the dry season lasts so long that no trees can live through it. This grass belt between the forest and the Sahara is called the Sudan. It reaches from the Atlantic to the Nile. How do people live in a grass country? They keep flocks of grass-eating animals. Through-



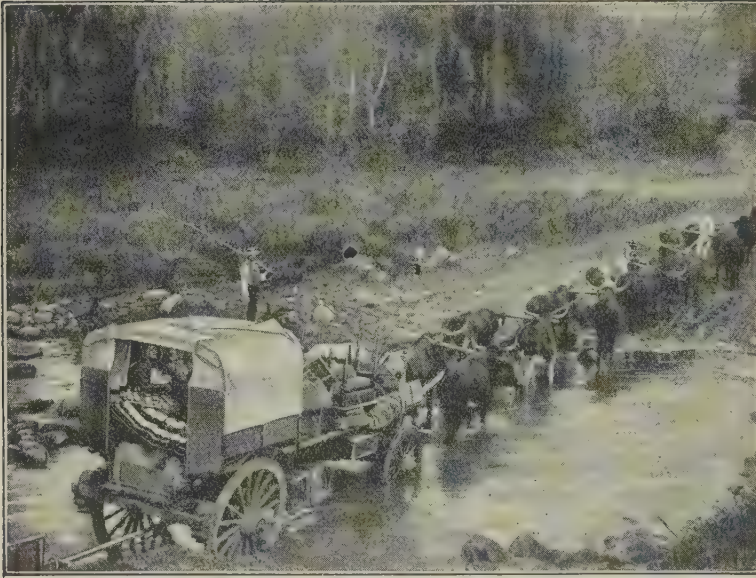
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Fig. 423. A native village in East Africa. A woman with wooden rammer is crushing corn for bread. The houses are built on stilts to keep away from mosquitoes, which do not fly high.

out the long Sudan are many tribes of strong black people who keep herds of cattle, sheep, goats, donkeys, and sometimes camels. Some of the people cultivate fields of a grain called millet, which they make into bread much like our corn bread.

These tribes are a long way from the coast. While England and France claim most of the Sudan, the natives as yet see very few Englishmen or Frenchmen. The chiefs rule the tribes as they have always done.

444. East Central Africa.—The physical map of Africa (Fig. 400) shows you that in the east a plateau extends from Abyssinia southward to the equator, and beyond. Some mountain peaks rise so high from this plateau that even in this hot land their tops are covered with snow and ice. On the Central African plateaus as in the Sudan, there is a rainy and a dry season. It is therefore also a grass country. Many antelopes, deer, and other grass-eating animals live there, as well as the lions that prey upon them. Here Mr. Roosevelt



Courtesy of Philadelphia Commercial Museum

Fig. 424. Boer farmers trekking, or moving, to the interior.

hunted the many wild animals that he tells about in his book, "African Game Trails." The country is so high and cool that white men can live there, and some are now settling in the region. Most of them are ranchers, with flocks of cattle, sheep, and goats. Two railroads have been built up to this plateau from the unhealthy eastern coast with its swampy forests. There are steamboats now on the large lakes of Central Africa.

QUESTIONS

1. Find the Congo River. To what European country does the greater part of the Congo forest belong? Around what river are the forests of South America? 2. Examine the circular houses of the forest peoples (Fig. 417). Of what are the walls made? 3. What things are used in making the roof? See how close the forest trees come to the village. Is it hard for these people to get food? 4. Compare the village men with the band of Masai warriors (Fig. 418). Which group has had more intercourse with white men? What ornaments are the warriors wearing and what are their weapons?

5. In the picture of the black man making tools, what coal does he use? What kind of coal do we use in our steel mills to smelt iron ore

and to make power for hammering steel beams into rails? 6. Why is the black man eager to buy the white man's tools? 7. Tell about something you have made by hand. How long did it take you?

8. Compare the giraffe with the horse; the zebra with the horse. Which parts are similar? different? 9. Get Mr. Roosevelt's book, "African Game Trails," out of the library. Ask your teacher to read parts aloud.

SOUTH AFRICA AND THE AFRICAN ISLANDS

445. White man's Africa.

—You see by the map (Fig. 404) that the southern part of Africa belongs to England. Four English colonies

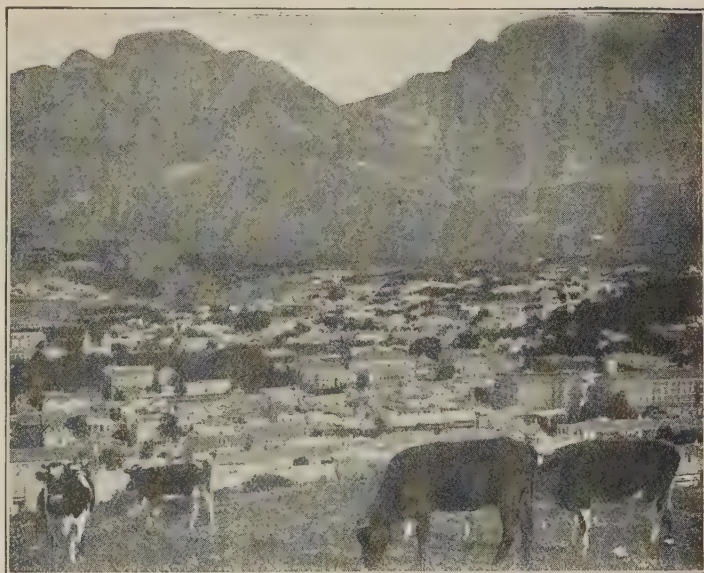
—Natal, Cape of Good Hope, Transvaal, and Orange Free State—have been united under one government, called the Union of South Africa. It is much like the government of the Dominion of Canada, which, you remember, has several provinces in a union which is very much like that of the United States.

South Africa is not hot like Central Africa. It is cool enough for white people, but there are more black men than white men there. White people settled there before they settled in the United States. They did this so that they might grow food for the ships that stopped there on the way out to India.

446. Agriculture and ranching.—The winds in this part of Africa come from the southeast. This makes heavy rain in the colony of Natal, but a high mountain range (Fig. 400) shuts most of the rain off from the interior. Here a high plain stretches away from the eastern mountains, getting drier and drier, until it becomes the Kalahari Desert. A little wheat is grown, but

most of the land is too dry for farms. It is a country much like our own Great Basin in Nevada, and the plateaus of New Mexico. The English and Dutch settlers have large ranches, with herds of cattle and flocks of sheep and Angora goats. These Angora goats are from the province of that name in the dry interior of Asia Minor. They do well on the dry plains of South Africa, and their fleeces of long, soft hair, called mohair, are used to make cloth.

The South African farmers have started a new industry—ostrich farming. Men tamed horses and cows, sheep and goats, long, long ago; but it has been only a few years since the people of South Africa tamed the ostrich, which is the largest bird in the world. Its wings are so small that it cannot fly, but it has long legs and can run very swiftly. It fights by kicking. One blow from its hard foot will break a



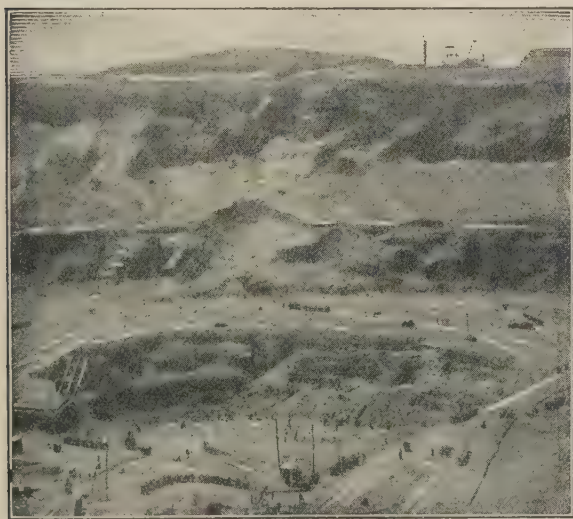
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Fig. 426. A view across the city of Cape Town to Table Mountain.

man's leg. Ostriches can be kept in fields with wire fences, just as men keep cattle, and the big birds eat grain or grass as cattle do. South African farmers now send millions of dollars' worth of fine ostrich plumes to the United States and to Europe. We have a few ostrich farms in southern California where the climate is like that of parts of South Africa.

447. Mining.—Diamonds and gold are the chief exports of South Africa. Those colonies produce nearly all the diamonds in the world, and much more gold than all North America. At Johannesburg there are many deep gold mines.

Kimberley is the greatest diamond producing center in the world. There men dig the blue clay from many big holes, and find in it the diamonds that are sent all over the world. White men own these mines, plan them, and run them; but native black men do nearly all of the work. The people who work in the diamond mines are kept inside a high fence near the mines for weeks and months at a time, and



Courtesy of Philadelphia Commercial Museum

Fig. 425. An open pit diamond mine, Kimberley, South Africa. How deep do you think it is?



Courtesy of Philadelphia Commercial Museum

Fig. 427. A family of ostriches.

when they go out are very carefully searched. Such care is necessary because the diamonds are so small that it is easy to carry them away by putting them in the mouth, or the hair, or up the nose, or even by sticking them under the skin, or by swallowing them.

Ships from the United States and England call regularly at Cape Town and Delagoa Bay. They carry to the people of South Africa the many kinds of factory goods that are sold in South African stores. It is interesting to know that these stores are much like those in the United States.

448. The African islands.—Does Africa have as many islands near it as Europe? The largest African island is Madagascar, which is about as large as California and Oregon together. Madagascar belongs to France, but there are very few white people on it. Much of it is forest, where some rubber is gathered. There are also regions

of grass lands like the Sudan. Cattle and hides are the chief exports. From Madagascar comes a kind of grass, called raffia, which is useful for many things besides making baskets.

Off the west coast of northern Africa are the Canary Islands, belonging to Spain, and the Madeira and Cape Verde Islands, belonging to Portugal. These islands are steep volcanic peaks. They have a warm climate, with no frost, and are in the pathway of ships going from Africa and South America to Europe. Many vessels stop to get coal, and the people export early vegetables and bananas to England.

These islands, being very rough, do not have much good farming land. They are very densely peopled, so the people must work very hard to make a living. The little terraced fields are often held up by stone walls. The northeast sides of the islands have much rain. The southwest sides have less? Why? To carry water to the dry southwest side of Madeira, cement-lined ditches have been built clear around the east end of the island to irrigate the hillsides.

The women there make beautiful embroidery. Most of the people are of Spanish or Portuguese stock. Many of them have gone to Massachusetts.

QUESTIONS

1. In what months does fruit ripen in South Africa? 2. Name two mining towns in Nevada and two in South Africa. What is mined in each? 3. How would a great bay entering Central Africa, like the Gulf of Mexico or the Gulf of St. Lawrence, have changed the history of the "dark continent"?

4. How are the products and occupations of Nevada and South Africa alike? How different? Why? 5. Follow the route of the Portuguese explorer Vasco da Gama from Lisbon, Portugal, around the coast of Africa to India. What islands on the northwest coast of Africa did he pass that belong today to Portugal? to Spain?



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Fig. 428. Crowds of natives bathing in the Ganges at the temple in the sacred city of Benares, India. (See Sec. 490.)

ASIA

THE SILK GROWERS

449. A tiny farm.—Shunzo Ito is a farmer who lives far away across the Pacific Ocean in Japan. You could walk entirely around his farm in a few minutes, for he has only an acre of ground. Ito's house has a framework of bamboo poles, a bamboo floor, and paper walls. Japan has many earthquakes in which stone or brick houses fall like houses of blocks. But bamboo and paper houses are not shaken down so easily.

450. The silkworm.—It is springtime, and Shunzo Ito's wife, Tami, is getting ready to feed silkworms, for soon the

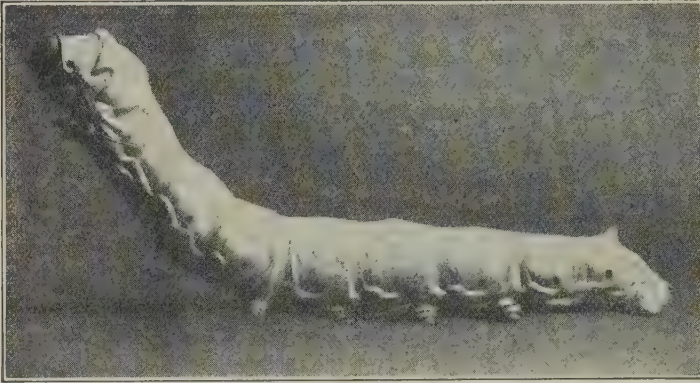
tiny eggs will hatch. When the baby silkworms appear, the busy season begins. Tami hurries to the garden to get leaves from a mulberry tree. These she puts in the straw for the silkworms to eat. Every morning Tami, with the baby on

her back, and the other children following, goes out to the mulberry bushes, which cover a quarter of the little farm. They gather many baskets of mulberry leaves and carefully spread them out on trays full of crawling silkworms. How those silkworms do eat and grow! They are given the first meal at four o'clock in the morn-



Courtesy of Belding Bros. & Co.

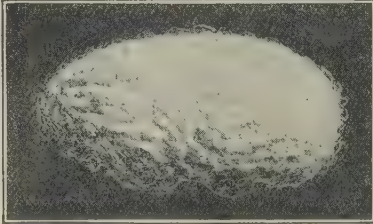
Fig. 429. Silkworms feeding on mulberry leaves. It does not take them long to eat their weight in leaves.



Courtesy of Belding Bros. & Co.

Fig. 430. A life-size silkworm ready to spin its cocoon. Did you ever see a cocoon made by a worm?

ing and the last meal at ten o'clock in the evening, with three other meals in between. Every few days they get too big for their skins and split them down the back. The worms



Courtesy of Belding Bros. & Co.

Fig. 431. The finished cocoon, natural size.

crawl out and go on growing. On cloudy days the worms are kept just warm enough by a carefully watched little fire. Every morning the trays must be cleaned. All the leaf stems and cast-off skins are taken to the garden and put on the ground beneath the trees for fertilizer. Here Shunzo is busy spading, so that the bushes will grow more leaves. Shunzo has no horses. There is not room to grow horse feed on his tiny little farm.

451. The cocoon.—At last the big, fat worms stop eating. They then stick their heads against a piece of straw, and when each

pulls its head away, a tiny thread of silk, like a spider's web, is to be seen between the straw and the worm's head. With this tiny thread the worm begins to make a little web, and, working 'round and 'round, spins about itself a cocoon of pure white silk. Then it goes to sleep, entirely inclosed in silk. If Tami did not disturb the cocoons, the little worms inside would change into moths and each would make a hole in its

cocoon and escape, ready to fly around and lay eggs. But a hole in the cocoon

means that the silk fiber is cut into many pieces, and what Tami wants is a long thread without a break.

So the cocoons are put into a hot oven and left there until the worms are



Courtesy of Belding Bros. & Co.

Fig. 432. A life-size silkworm as it looks after it has spun its cocoon. It comes out of its shell as a moth.

roasted dry and crisp. The cocoons are



Courtesy of Belding Bros. & Co.

Fig. 433. A worm spinning its cocoon. Name some other spinning insects.

next soaked in water until the threads come loose. Then Tami and her little girls each take four cocoons, find the ends of the threads, and carefully unwind them (Fig. 435), twisting the four fibers together so as to make one long, fine thread of silk. This thread is wound upon a reel. Each cocoon yields a thread about three hundred yards long. For days and days they work, reeling silk.

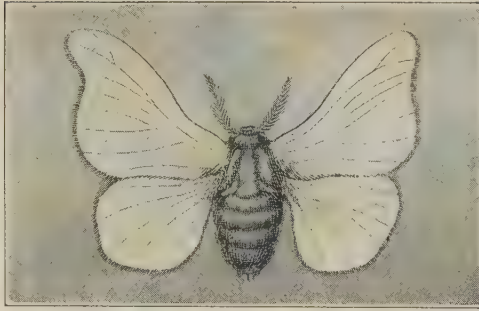


Fig. 434. The moth that lays the silkworm eggs. One moth lays about 350 bluish colored eggs, each about the size of a pin head.

than in Japan that it does not pay us to grow silk. We send cotton to the Japanese, for we can raise that on our big farms, and with the cotton we pay for the silk which has been grown in Japan by much hand labor. Shunzo Ito has a brother in America,

where a man can earn more money than he can in Japan. One man in America with horses, plows, and other machines could produce several times as much as he can in Japan by hand labor only.

QUESTIONS

1. On the globe, locate Asia. 2. Trace carefully two routes from the United States to Asia.
3. Find in what zones Asia is, and then tell about its climate. 4. What oceans wash its shores?
5. What islands lie east and southeast? Who owns the most important ones?
6. In what direction is Japan from your home?
7. Name some articles that were made in Japan.
8. Why does Japan buy so much cotton from the United States? 9. Imagine yourself a Japanese boy or girl and describe your clothing.

452. Silk for America.—At last they have a few pounds of raw silk, which the merchant in the village buys and sends down to the great city. Here it is put with many other parcels of silk into a big bale. From Japan the bale of silk rides with many other bales in a big steamer, across the Pacific Ocean. In two weeks, it reaches San Francisco. In another week, it has passed on an express train through Chicago to Paterson, New Jersey. There it is dyed, spun into thread, and woven into silk goods for the people of the United States.

453. Other silk centers.—Many, many thousands of Japanese farmers keep silkworms. Silk is also produced, you will remember, in the plains of Lombardy in northern Italy, and in the valley of the Rhone in France. Mulberry trees will grow well in the United States, too, and sometimes people here raise a little silk. But wages are so much higher in this country



Fig. 435. Japanese women reeling the strands from several cocoons into one thread. See the trays of cocoons at the left.

Courtesy of Belding Bros. & Co



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Fig. 436. Japanese women threshing barley by hand. How do they do it? See the native dress, the umbrella, and the paper window.

JAPAN

454. An ancient people.—Shunzo Ito's country is a very old country. For many hundreds of years Japan has had cities, temples, laws, books, and schools. Every boy and girl in Japan is expected to know how to read and write and to tell about the history of the country back almost to the time when Moses lived in Egypt. At that time the present Emperor's ancestors began to rule Japan. The Japanese are intelligent people. They read a great deal. There are many book stores in their towns, and they read more newspapers than any other people. They are brave, polite, and proud of their country.

The Japanese have many games and sports. Even the grown-ups play games with the children. The boys are fond of walking around on stilts, and of flying paper kites.

The little girls, on the third of March, have what is known as the Feast of Dolls. The people like to watch wrestlers and acrobats do the most amazing things. Japanese acrobats often come to this country and give exhibitions of their skill.

The Japanese belong to the race of people called Mongolians. They are not quite as tall as Americans, and are of a brownish-yellow color, with straight, black hair, and small, slanting, black eyes. They are very clean people; bath houses are almost as

common in the cities and towns in Japan as drug stores are in this country. You might enjoy the bathing, but there is one custom of these people which you would not like. In order to make the little children strong and hardy, their mothers often duck them into cold rivers.

455. Beautiful things.—The Japanese love beautiful things. In the spring, when



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Fig. 437. Daily exercises of Japanese school boys.

the cherry trees bloom, everyone goes out to see them. The beautiful gardens are adorned with many flowers, and with little dwarf trees only a foot or two high. These have been kept in pots for hundreds of years. In the gardens are peach and cherry trees that produce no fruit, but have flowers almost as large as roses.

In Japanese homes one sees many carvings and other ornaments made of wood, metal, and lacquer ware. Lacquer is a kind of shiny varnish that is put on wood.

We might try ever so hard, but we could not make these things as the Japanese do. Sometimes we find in our big stores a whole section showing lovely china, curious ornaments and toys, and rich embroideries from Japan. The Japanese have made these things for hundreds and hundreds of years.



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Fig. 439. Hakone, a Japanese town of straw-roofed houses.

456. A progressive people.—In 1854, Commodore Perry, with some American naval vessels, went to Japan. Before that time, the Japanese would have nothing to do with strangers. But they liked Commodore Perry and agreed to trade with the people of his country. They soon sent some of their young men over to America,

to go to school and learn our ways of doing things. Now Japan has railroads, telegraphs, telephones, many factories like our own, and a well-trained army. The Japanese are a very shrewd, progressive people.

457. A poor country.—The Japanese Empire includes nearly four thousand islands lying along the coast of Asia, between snowy Kamchatka and the hot Philippines. Most of the people are on the big island of Honshu and on the two smaller islands to the



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Fig. 438. A new avenue in Tokyo, European style. See the bicycles and the men drawing carts or jinrikisha. The big sign at the left is the most foreign-looking object to our American eyes.

Fig. 440.



Fig. 441. Relief Map of Asia.

south of it. Tokyo, the capital, is on Honshu. The northern island is too cold for the people to be able to grow much food. The Japanese also rule Dairen in China, and the peninsula of Korea. After the World War, the Peace Conference at Paris gave to Japan the peninsula of Shantung in China. It has much coal and iron ore, and many people.

The country of Japan has very few things that help people to make a living. There is little coal, little copper, and little iron; and no oil such as we have in the United States, or nitrates such as they have in Chile. Mountains and hills cover most of the land, so that only a small part of it can be made into farms. Yet Japan has many people—more than the United Kingdom has. It has nearly half as many as the whole United States, even though the four main islands, where most of these people live, are smaller, all put together, than the state of California.

How do so many people get their living in such a poor, little country? To do it they have to work very hard. They cultivate their little farms as well as we would cultivate the smallest gardens. They do not have land enough to raise food for many animals, so they keep but few. Therefore, they do not have much meat or milk.

Instead of these foods, they eat fish. There are more fishermen in Japan than in any other country. Thousands and thousands of Japanese fishing boats are at sea when the weather is good.

In some parts the climate is too rainy for wheat, and rice is raised instead. The

people eat rice as we eat bread. Instead of butter, the Japanese use bean oil, some of which they make at home and some of which they buy from China and Korea. They also eat many vegetables, which they grow on their little garden farms.

As there are so few animals, the people do not have much leather for shoes. Often they wear shoes made of wood. These they slip off when they go into a house. Their socks are made like mittens, with a

separate place for the big toe, so that they can slip it into a strap which holds on their wooden shoes. Sometimes the little Japanese boys take off their wooden shoes and play ball with them.

458. Trade.—Since the Japanese have learned the ways of people in America and Europe, they have been building steel ships and factories as the people do in England and America. There are large cotton mills at Osaka, which manufacture raw cotton from the United States. Japan has a large trade with China, and also with



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Fig. 442. Native Japanese in their flower garden. Do you know any Japanese flowers, trees, or vines?

the United States and with Europe. To us they send silk, tea, and beautiful things; we send them cotton, steel, and kerosene oil. Steamers of many nations call at Yokohama and at Osaka.

At the head of the Japanese Government is an emperor, called the Mikado. Japan now has a Parliament, but it does not have as much power as the English Parliament.

Korea, or Chosen, was long an independent kingdom. It is now ruled by the Japanese. Much of the surface of Korea is mountainous, and there are mines of gold and other metals. In Korea, as in Japan, most of the people earn their living by tilling the soil.

QUESTIONS

1. Japan has nearly 4000 islands. On how many do most of the people live? How does this small country compare with California in size and population? 2. Compare Japan with the British Isles in location, area, and population. Why compare these two countries? 3. Account for the following Japanese customs: why the people eat more rice than wheat, more bean oil than butter, more fish than meat; why they have few animals to help them; why they wear shoes of wood or straw rather than of leather.

4. Why are Japanese farms so small? 5. What fine traits of character have the Japanese developed? What signs of poverty do you see in the town of Hakone (Fig. 439)?

6. Collect Japanese articles and pictures of Japanese homes and people.

THE CHINESE TEA GROWERS

459. **The tea trees.**—Li Yu, with his wife and children, lives in a little brick house in the corner of his tea garden, near Hankow, China. Li's tea trees are five feet high, evenly trimmed, and planted in

straight rows. In the spring, when the tender leaves start to grow, Li Tai Tai, his wife, takes some baskets, and, with the children, goes out to pick tea. The children help their mother and they all work busily, picking great basketfuls of tea leaves.

About nine o'clock, one of the boys makes a charcoal fire in a little stove that they brought along with them. Water is boiled in a teakettle, and everybody has a drink of tea. At dinner time, they stop work and have some boiled rice and another drink of tea.

All the day long the family picks tea. The next morning they spread it out on trays in the sun to dry, and again they pick. This goes on day after day. Everybody picks, little and big, old and young, except the baby, who plays in the sun, and Li Yu, who is busy cultivating the tea plants with a spade and a rake. The tea farm, like the silk farm in Japan, is too small to feed a horse; so the tea grower must do his own digging.



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Fig. 443. A Korean girl at the edge of a well. What do you think of her bucket and its rope, her shoes, and her dress?

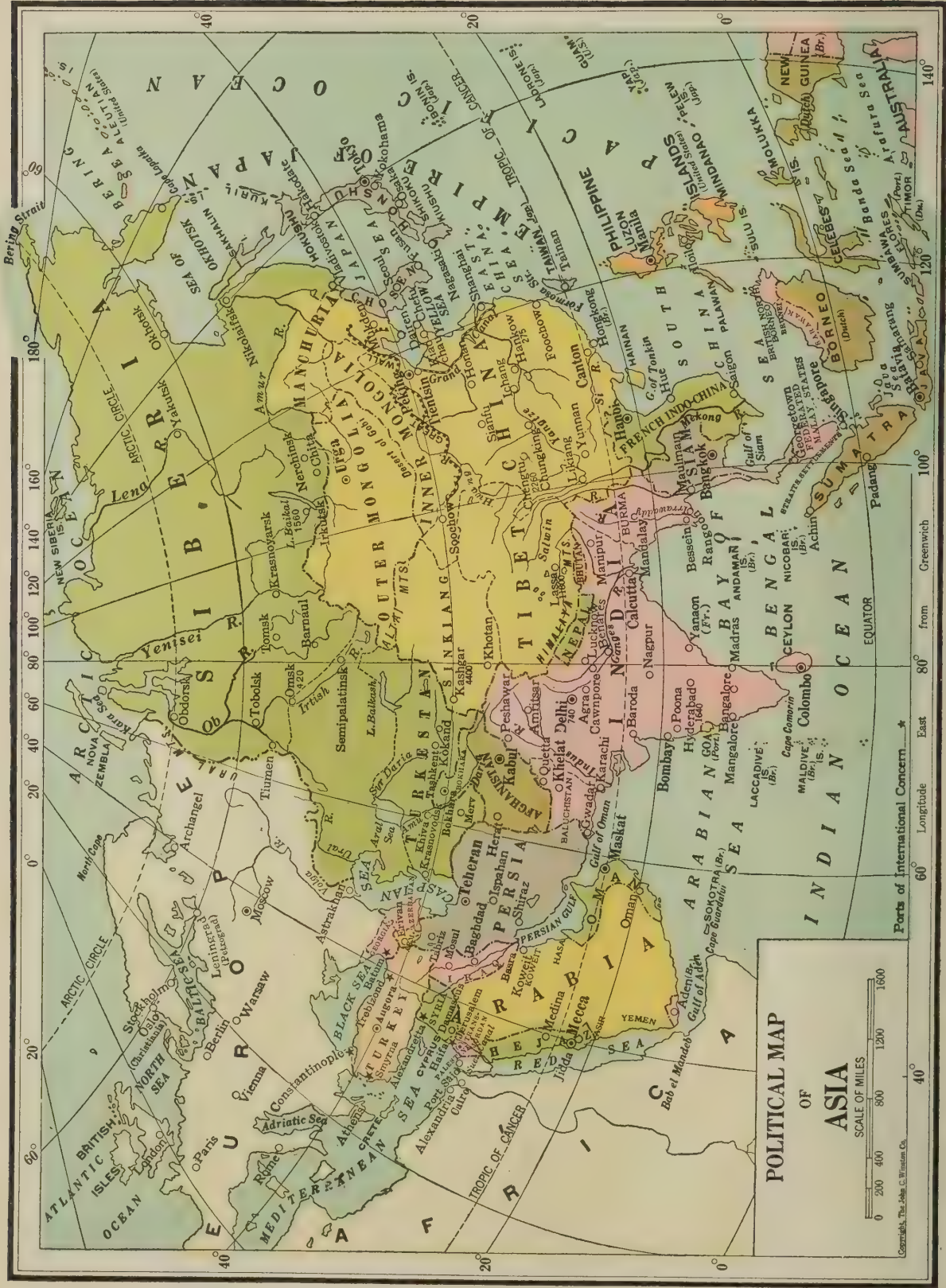
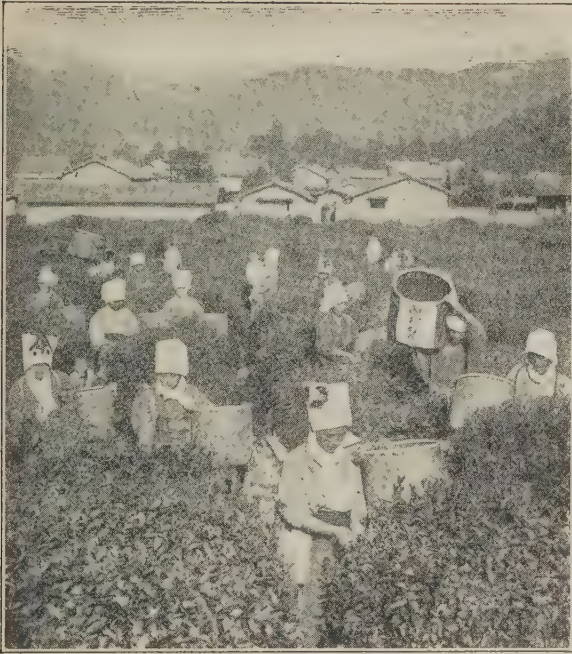


Fig. 444



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Fig. 445. Women and children do most of the picking of the tea leaves in both Japan and China.

460. Tea drinking.—In China and Japan water taken from open wells is not safe to drink. It may make one ill. If this water is boiled, however, it is safe to drink. But warm water is not pleasant to the taste. So for centuries the Asiatic peoples have been boiling their drinking water and dropping into it a few tea leaves to make the water taste better. Thus they learned to drink tea.

461. Curing tea.—When the tea leaves are almost dry, they are carefully broken from the little twigs and put into tubs. The leaves are next piled up for a day in a warm room. Li Yu himself watches to see that the precious leaves do not get too hot, or too cool. The leaves must be heated just so, if the tea is to have a fine flavor and to bring a high price. Next, Li Tai Tai, the mother, and Koo Mai Chee, the eldest daughter, take the leaves and roll them between their hands to make them

curl up. The leaves are then placed over a charcoal fire and dried. They are now put into boxes, for the tea is ready to sell.

As Li Yu's family have worked every day for three weeks, they now take a holiday. Li Kai (the biggest boy) and his father and grandfather fly kites all the morning. Nearly everybody in China flies kites when there is a holiday. Kites in China are made in fancy shapes. Li Kai flies a kite that looks like a bat, his father's kite looks like an eagle, and the old grandfather's kite is shaped like a man. In the afternoon, all the family dress up in their bright-colored clothes and go to town. The boys and girls have a jolly time looking at peep shows and shadow pictures, and eating melon seeds. The Chinese amused themselves in this way long, long before we had movies.

The next morning, Li Yu ties a box of tea on each end of a pole, balances the pole across his shoulders, and trudges off to a town miles away to sell his tea. In a month it has gone by an English steamboat down the Yangtze River to Shanghai.



© Publishers' Photo Service

Fig. 446. Preparing the tea for shipment. The tea is carefully dried in these broad pans.



© Keystone View Co.

Fig. 447. The Chinese eat with chopsticks instead of with forks. Chopsticks are slender wooden sticks, and it takes much skill to use them.

In another month an ocean steamer has carried it to San Francisco. In yet another month a woman is buying it at a grocery store in a town in Pennsylvania, or perhaps in Ohio. She has asked for the best tea, and the grocer has just given her some of Li Yu's tea. He has charged her a high price because it is the best tea in the store. With the money received from his tea, Li Yu may buy some cotton cloth, or some oil for his lamps.

462. Tea in other countries.—Li Yu is not satisfied with the price his tea brings. It is not nearly as good as the price his father used to get. This is because in India the English also have learned how to grow tea. Instead of doing the work all by hand, they use machines to sort and cure the tea. Instead of having little tea gardens, as the Chinese and Japanese do, the English have large farms, or plantations, in Ceylon and on the slopes of

the Himalaya Mountains near Calcutta. Hundreds and thousands of the people of India work in these English tea plantations and use the English machinery. The English can raise tea so cheaply that the Chinese have sent people down to Ceylon to learn the new way of doing it. They want to learn a better way, even though their fathers and grandfathers and great-grandfathers have been growing and curing tea by hand ever since long, long before Columbus discovered America.

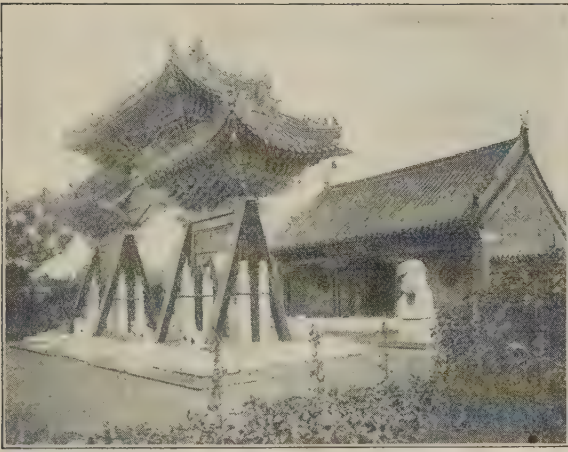
Tea trees will grow in our own Cotton Belt, and some people have grown a little tea in South Carolina. But tea growing is so much work that no one is planting any more tea trees in this country. Instead of growing it here we buy it from Ceylon, India, China, and Japan, and pay for it with our cotton, petroleum, and lumber, things which are easier for us to produce than is tea.

QUESTIONS

1. Describe the journey of a box of Li Yu's tea from his garden to your tea table.
2. When Li Yu and his family start to pick tea leaves in the spring, what season are the fruit farmers of South Africa looking forward to?
3. Find a city on the Atlantic Coast of the United States that is on the same parallel of latitude as Hankow. Why would tea be likely to grow near this city?
4. Soak a few tea leaves in hot water. Spread them carefully on a piece of paper and show them to your classmates.

CHINA

463. The people.—China is the oldest nation in the world. From China, in ancient times, people carried learning and the art of reading and writing to Japan and Korea. Thus China may be called the mother of the Far East. For hundreds of years before there were any white people in America, the Chinese were doing



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Fig. 448. Chinese works of art in front of an old temple. The dogs on the roof are to keep away evil spirits. This old temple is now occupied by an American consul.

many things that we have only recently learned to do. They invented printing and gunpowder and made compasses long before America was discovered, and before white men knew about these things. Millions of Chinese could read and write when our ancestors knew nothing of books. For hundreds of years students in the higher schools of China have studied the Chinese Classics—books written long ago by the sages, and arranged by Confucius, China's great teacher.

We would find it a much harder task to learn to read and write Chinese than English. We have twenty-six letters and we use the letter *c* to help spell ever so many words such as *cow*, *cat*, or *coat*. But the Chinese have a sign for each word: thus, instead of learning twenty-six letters, Chinese children have to learn a sign for each word in the Chinese language. What a job! Because it is so much work to learn these word signs, many Chinese people have never learned to read or to write. Recently one thousand of the most used word signs have been selected and are being taught. Soon

many more Chinese will be able to read and to write the common words of their language.

China is very much interested in modern education. Many young men and a few young women from China have studied in our country. Some schools, much like our own, have been established in China.

It seems to us that the Chinese do many things backward. When two Chinese meet, each shakes his own hands. The lines of their writing begin at the top of the page and read down, instead of across; and the first line is at the right side of the page instead of at the left. They eat with chopsticks instead of forks. But they think we do things backward, and they know that they have had their ways longer than we have had our ways.

The Chinese have been in one place such a long time, and have done everything so many times during so many years, that they have come to a certain way of doing everything, and it is very hard for them to change. They are a people of much ceremony and great politeness.

For a very long time, they would have nothing to do with strangers and would not even let them travel in their country. But China is now beginning to change, just as Japan has changed. Young Chinese are going to American and to English colleges. For a long time we had nothing

中華者世界最古之國也

China is one of the oldest countries in the world

Fig. 449. Chinese writing and its translation.



© Publishers' Photo Service

Fig. 450. Houseboats on the river at Canton, China.

that the Chinese wanted to buy; so they were not anxious to trade with us. Now they want our cotton cloth, our oil for their lamps, and our machines for their factories. They have telegraph lines, and are beginning to build railroads and steamboats. China, the oldest of the nations, is becoming progressive.

For many centuries China had an emperor who lived at Peking, the capital. He sent a governor to each of the eighteen provinces. A few years ago, China became a republic. During your lifetime many other changes will be taking place in that great nation.

The Chinese belong to the Mongolian or Yellow race, as do the Japanese. Their hair is black and very straight. China has nearly twice as many people as all North and South America.

464. The great plain of China.—Eastern China has a low plain, formed by earth washed down from the mountains. Like the Mississippi delta, it is rich and level. The summer rain brings plenty of moisture. This with warm weather makes big crops. Sometimes the rains are even too heavy, and the rivers overflow and drown thousands of people.

On the wide plains of China, one may see

thousands of villages and hundreds of towns and cities. Millions of people raise rice, tea, mulberry trees, corn, beans, sweet potatoes, wheat, kaffir corn, and millet. To get meat, the people catch fish in the canals and rivers and raise many chickens, ducks, and pigs, and in the north some sheep.

As there are few animals to pull plows, the farmers

must often turn the soil and till the crops with hand tools. This makes much hard work. In some places, these patient and industrious people have carried dirt in baskets to make terraced gardens on hill-sides. They often lift water by hand from canals to the rice fields.

Rice is the greatest crop grown on this low plain. It is the chief food of the people. The heavy summer rains give plenty of water, so that the farmers can flood their little rice fields. Rice, you remember (Sec. 173), is a swamp plant, and can grow in the water. As soon as the rice is planted, the fields are flooded

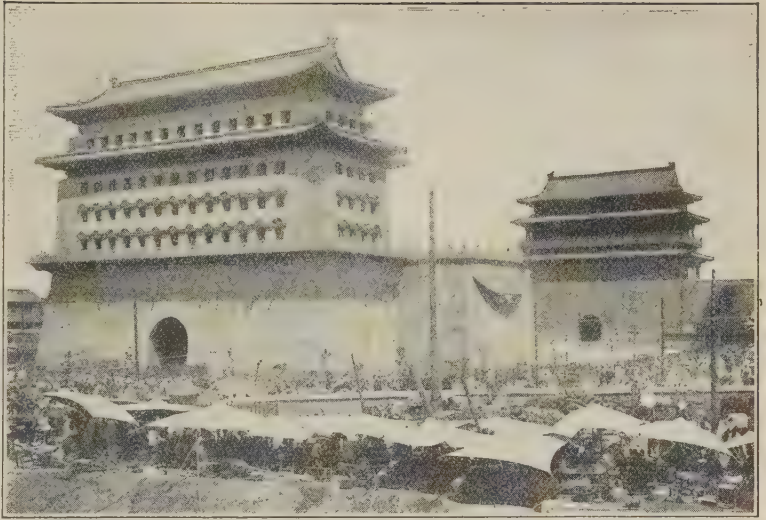


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Fig. 451. The great wall of China, west of Peking. It was built to keep nomads out of China.

for a time; but when the rice is ripe, the water is drawn off and the ground allowed to dry out, so that people can easily walk upon it as they harvest the rice.

As so much of the land is in farms, there are very few forests, so that lumber is scarce. To have enough wood, some farmers set out groves of bamboo. The bamboo trees grow very quickly, and the Chinese and Japanese make very many useful things from the strong and hollow stems of this wonderful tree.



© Publishers' Photo Service

Fig. 453. Chinese trading markets just outside of one of the important gates in the great wall that guards Peking.

465. Trade and manufacture.—The roads of China are very poor and much of the trade goes by water. China has three rivers of large size and about thirty other rivers. These rivers and their branches reach to almost every part of the country. Also there are many canals. On this network of waterways thousands of boats go slowly back and forth, carrying freight. Foreign com-

panies now run steamboats on Chinese rivers and the Chinese have begun to build railroads. As a result, China's trade is increasing.

Most of this trade goes through Shanghai, which is the New York of China, and through Hongkong, a city owned by the British. It is on an island at the mouth of the Si River in South China. Steamers go from Manila to Hongkong, Shanghai, Yokohama, and San Francisco, and then on through the Panama Canal to New York. Other steamers go from Japan and China to New York by way of the Suez Canal and the Mediterranean Sea.

Hankow, on the Yangtze River, at the mouth of its branch, the Han, is sometimes called the Chicago of China, because of its central location. Peking, the capital of China, would be the fourth city in rank if it were in the United States. There is now a railroad from Peking to Hankow on the Yangtze, and also one through Manchuria, Siberia, and on through to Moscow, Berlin, and Paris.

The trade of the United States with

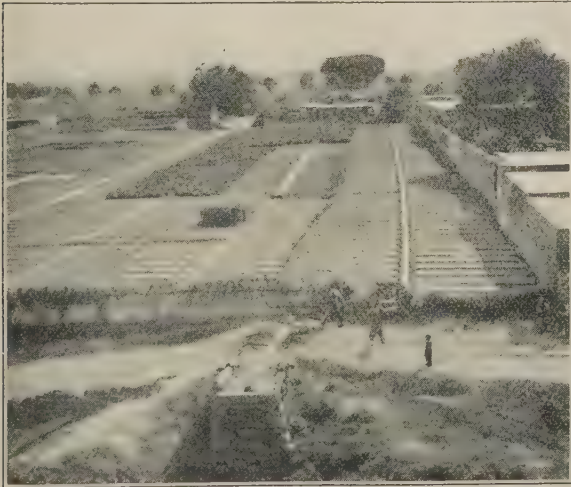


Photo. by F. N. Meyer, U. S. Dept. Agr.

Fig. 452. A cabbage garden at Chang-li, China. Men carry water for it from the stone-walled well.

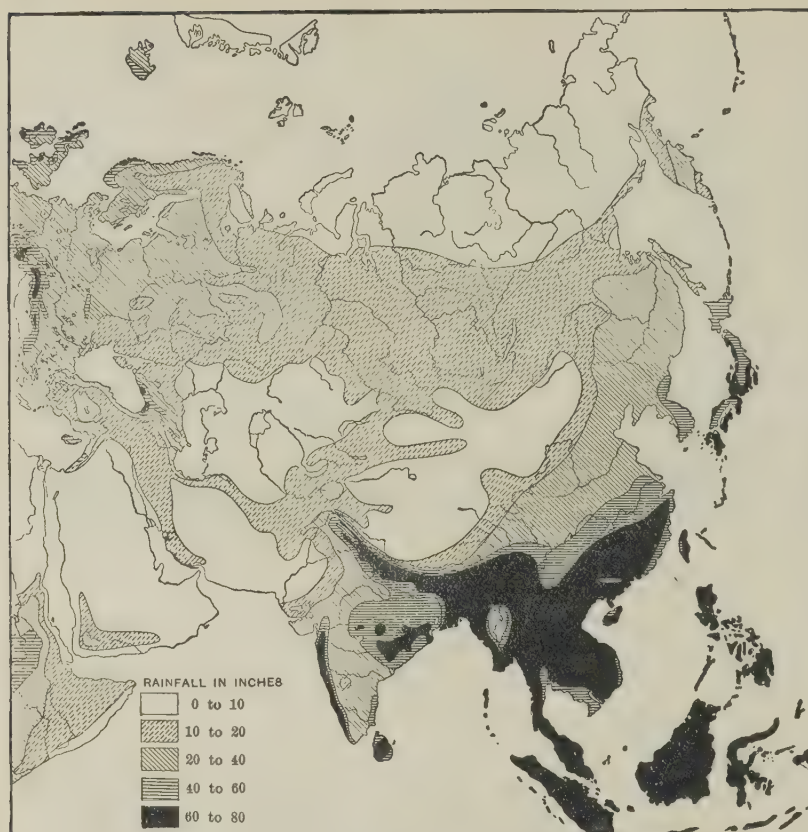


Fig. 454. Rainfall map of Asia.

China is growing year by year, and will some day be much larger than it now is. For thousands of years, the Chinese have done all their manufacturing by hand. Since they have begun to visit us and buy machinery, they are beginning to build factories like our own. Some day China may become the greatest manufacturing country in the world. Why may this be so? Because she has so many industrious people to do the work and plenty of iron and coal to make the machinery. These three things—coal, iron, and workers—may make her a rich and powerful nation; but first she must learn more about science and the use of machinery. It will be fine for all the world if the Chinese use their great gifts for the health and happiness of mankind, rather than merely for wealth.

466. Chinese territory.

—The country which is called China proper has eighteen provinces. For centuries China also ruled Tibet, Sin Kiang, and Mongolia. Taken all together, China and these outlying lands are about the size of the United States. However, they have three times as many people as the United States. Nearly all of these many people live in China proper, although it is no larger than the country east of the Mississippi River. Why are there so few people in the western part of the country? Look at the rainfall map (Fig. 454) and the physical map (Fig. 440).

They will tell you. You see that Tibet is a plateau, so high that it is very cold. (Sec. 498.) Very few people can live there. Sin Kiang is a desert, so dry that during most of the year people cannot cross it. Travelers there must stick close to the foot of the very high mountains, so that they can get the water that comes down from the melting snow fields on the high peaks before it sinks into the desert sands. Mongolia is partly a desert region with only a few nomad herdsman.

These high plateaus of Central Asia are sometimes called the roof of the world. The windstorms are terrific, and the sand blows like a torrent of fire. The few shepherds move from place to place, following the scanty water and grass, as do Hakim and the Arabs in the Sahara.

These Asiatic shepherds, who are not Chinese at all, receive you in their skin tents with all the grace and dignity and courtliness of people who know that their families have lived in that country for thousands of years, and have always had the habit of treating guests politely.

Manchuria is a good country for people to live in. There is enough rain for farming. The Chinese farmers who live there grow wheat, millet, and beans. Many of the beans are sent to Japan and to Europe.

467. The future of China.—

If a Chinese cart should upset a fruit stand, the owners would not have a lawsuit about it. The people who saw the accident would talk it over and decide how much the owner of the cart should pay to the owner of the fruit stand. This Chinese way of settling differences does not leave much for the government to do, the people take care of themselves.

With factories, foreign trade, and railroads, China needs a better and a stronger government. The educated young Chinese have a cry, "China for the Chinese." They are working hard for a better government in China.

QUESTIONS

1. Why does China send her students to-day to the youngest of all the great nations? 2. In newspapers and magazines, hunt for notices of steamship lines between the United States and China, and advertisements of trading houses. 3. What two large rivers cross the low plain of China? Why do the Chinese people live crowded together? 4. Describe the bamboo plant. What is it used for in Asia? What



Photo. U. S. Signal Corps

Fig. 455. A Russian church at Harbin, Manchuria. Name two ways by which a traveler might reach Harbin from the United States.

crop plants in the United States have jointed stems like the bamboo?

5. Locate Peking, Shanghai, Hongkong, Hankow. 6. Why has China so much waste land? 7. Why will China become a great manufacturing nation?

8. Describe the work done by the Chinese boys and girls and their parents on a silk farm or in a tea garden. 9. Where in the United States is rice grown? How often do you eat rice at home? What vegetable do you eat oftener than rice?

ASIATIC RUSSIA

468. A region of great size but few people.—Before the World War, Russia ruled a vast region in Asia. It included all of Siberia and the provinces of Central Asia lying between the Caspian Sea and the Chinese provinces, and extended southward to the great mountains. This mountain wall, extending from Asia Minor eastward through the high plateau of Tibet to China, has always made it very hard to cross Asia from north to south.

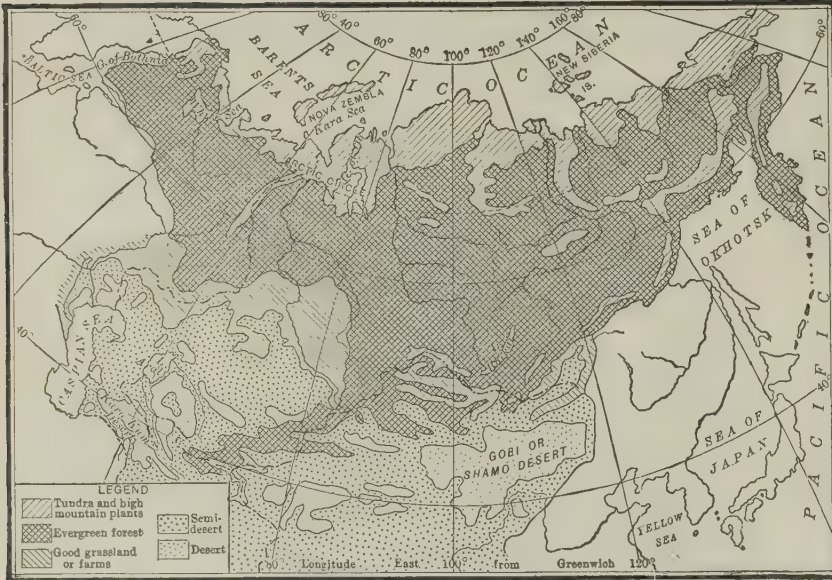


Fig. 456. Map of the northern part of Asia showing the vegetation belts described in Sections 468-472.

What kind of country is Asiatic Russia? First we must remember that it joins European Russia. The parts in Asia are very much like the parts in Europe that they touch, except that they are colder in winter, hotter in summer, and drier, because they are farther from the Atlantic Ocean. You remember that European Russia has several belts as we go from north to south. These belts extend into Asiatic Russia—in the north the tundra, home of the reindeer; then the forest, home of the fur gatherer; then the treeless plain, home of the wheat grower; and lastly, the great, dry plain of the Caspian Sea, home of the Cossacks and other wandering herdsmen.

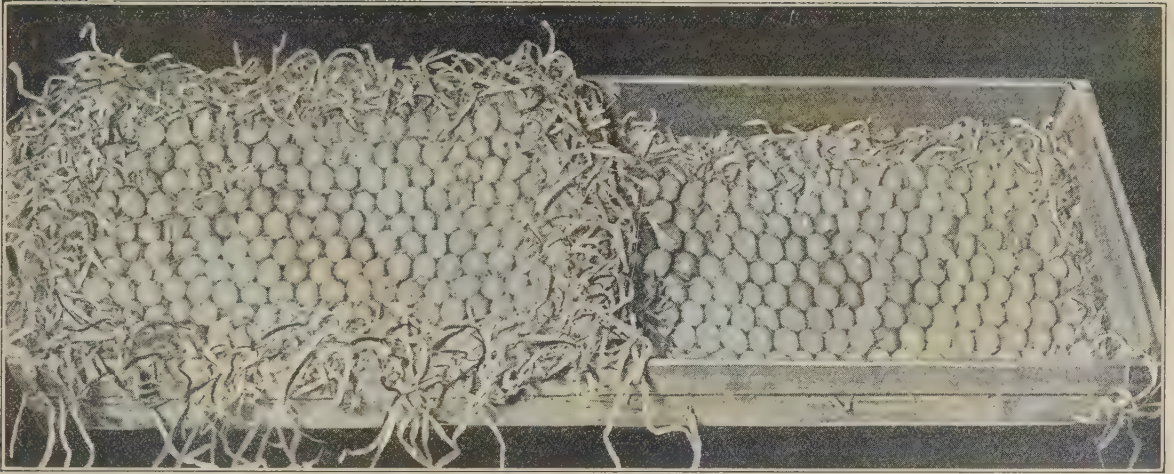
469. The tundra.—In the north of Asiatic Russia is the tundra, reaching from the Ural Mountains to the Bering Strait near Alaska. (Fig. 456.) The Arctic Ocean north of Siberia is so full of ice that ships cannot sail there even in summer, but the tundra is bright with flowers and green with grass when the sun shines night and day. A few tribes

wander about this distant land. Like the people of Lapland, they live on the flesh of their reindeer. In summer, the reindeer carries the people on his back. In winter he draws them on sledges.

470. The forest region.—As we go southward, the small bushes of the tundra become larger and larger, until finally they are small trees, and then gradually larger trees—a great forest belt.

(Fig. 456.) Like the tundra, it reaches the whole length of Europe and Asia, from Norway to the Bering Sea. The Siberian part of this forest is not much used. The few people who live in it are hunters who gather here the furs that go to the markets of Berlin, London, and New York. This forest, the largest in the world, is so far from cities and people that no one has yet been able to get much of its lumber to market.

471. Farming region.—In Siberia, as in Russia, a level farming belt lies south of the forest region. The Siberian farm belt is long, very long, extending from the Urals to the Altai Mountains. For thousands of years this plain was the home of roving herdsmen. About 1900, the Russians built a railroad across it. On this road you can ride for two or three days and nights, and see only a flat, level country with rich black soil, good for wheat. At Lake Baikal the railroad enters the mountains, and ends at Vladivostok on the Pacific, twice as far from Leningrad as San Francisco is from Washington.



Courtesy of U. S. Dept. Agr.

Fig. 457. A six-foot crate of Siberian eggs sent to the London market. Through what cities do they pass?

After this railroad was built, Russian farmers began to settle and make farms in Siberia. You will remember that the Americans have done the same thing in Dakota and Canada. We now know that Siberia is a fine wheat and rye country, much like Dakota (Sec. 75) and West Canada (Sec. 78). Many American reaping machines have helped the Russian settlers to gather their crops of grain. These Russian farmers also keep cows, and make butter to ship to England.

Russia in Asia is a country with room for many, many more people. It has but a fourth as many people as the Russia in Europe.

472. The great steppes.—Asia is a very big continent. It is over five times as large as the United States. It does not seem far on the map (Fig. 40) from the town of Orenburg on the Ural River in southeastern Russia, to Tashkent at the foot of the high mountains near the western boundary of the Chinese territory. But really those two towns are farther from each other than is Boston from Chicago. For thousands of years, caravans of camels have passed back and forth on that route,

carrying Chinese merchants with silk, tea, and fine metal work to sell at the yearly fairs in the Russian cities. It takes the camels a full month to make the journey between these two cities.

What does the country look like? It is flat—a level plain. For hundreds of miles there are no mountains, no hills, no farms, no trees. This plain is called a steppe. Some rain falls in the summer time, and there is a little grass. This is the home of people called Kirghiz. They follow their flocks about wherever there is grass and water, as Hakim and the Arabs do in northern Africa and Arabia (Sec. 415). They are tall, strong-looking people, with dark skins and high cheek bones. They are polite, friendly, and very hospitable. They ask travelers to stay all night with them, and give them warm tents of thick felt, made of camel's hair, and beds of wool blankets piled four inches thick on the ground. For supper and breakfast they offer milk, both sweet and sour, and boiled lamb's flesh, for they kill a lamb in honor of guests. While one of their Swedish guests was looking at their things one day, an old grandmother slipped into



Courtesy of U. S. Dept. Agr.

Fig. 458. Two-humped Asiatic camels hauling durum wheat to market across the level Siberian steppe or plain.

his tent and mended his clothes for him. The needle and thread that she used came from England.

The route from Orenburg to Tashkent passes the shore of the Aral Sea, which is slowly drying up, leaving a bare dirt plain covered with salty dust. This is very desolate indeed. The map shows a big river, the Syr, flowing into the Aral Sea. Sometimes you would never guess that it was a river, for you would only see pools of water with sand bars between. The river flows only when the snows melt at its source on the high mountains.

473. The cities of the desert.—The city of Tashkent nestles in a valley at the foot of the great mountains. On their high tops are shining white snow fields. Lower down are dark green forests of pine, such as we saw on the Rocky Mountains or the Alps. Below the forests are brown, dry pastures, like the plains of Arizona or Nevada. In the midst of the brown valley is a green island, made by the shade trees, orchards, and fields of the farmers around Tashkent. The farmers here use the melted snow water from the high mountains to irrigate their farms, as the people do in California.

These farms and gardens raise enough food to feed the people of the city. Near Tashkent one may see fine gardens, with melons, pumpkins, and many other kinds of fruit and vegetables. Children are building dams and making mud pies in the little streams of water that flow along the edges of the gardens. Apricots are ripe in the orchards, and every one is glad to get some fresh fruit after a long journey across the dry plain.

Tashkent is a city of one and two-story houses made of sun-dried brick. In the city are thousands of dark-skinned, dirty people. As we pass a house in a quiet street, we hear a clack, clack. It is the sound of a loom, but not so fast or so loud as the looms of South Carolina, or of Massachusetts, or of Manchester. (Sec. 222.) Let us visit another home to see what is going on. A woman is weaving a rug of sheep's wool on a hand loom. It is a very fine rug. It will take two years to finish it. The people of this country make some of the finest, most



Photo. U. S. Signal Corps

Fig. 459. The Omsk station on the Trans-Siberian railroad. What signs of cold weather do you see?

beautiful, most costly rugs in the world. Sometimes these rugs are taken to the great fair at Nizhni Novgorod, some go to Constantinople, and many of them finally get to London, New York, Chicago, and San Francisco, where they are sold as the Oriental rugs that we prize so highly.

At sunset, out in the street again, we hear a strange, loud call from the top of a tall, narrow tower, the steeple of a mosque or Mohammedan church. The cry is the call of the priest, or muezzin, calling the Mohammedan people to prayer. In every Mohammedan city throughout the world, the muezzin calls the people to prayer at sunset.

South of the Aral Sea and the Syr River, much of the country is sandy desert. In this desert, near its southern edge, there are several cities, Khiva, Bokhara, and Samarkand, all much like the city of Tashkent. Their people are fed from farms which are irrigated by the waters of streams that flow down from the snow fields of the high mountains of central Asia.

474. The Central Asian mountain system crosses all the belts of Asiatic Russia except the tundra. The building of the railroad which runs over these mountains from Leningrad and Moscow to the Pacific Ocean was a very hard job. There are not many Russian settlers east of the mountains. Most of the country on the east side of the mountains is covered with forests. It is cold in winter and has but few people. Many of the people who settled

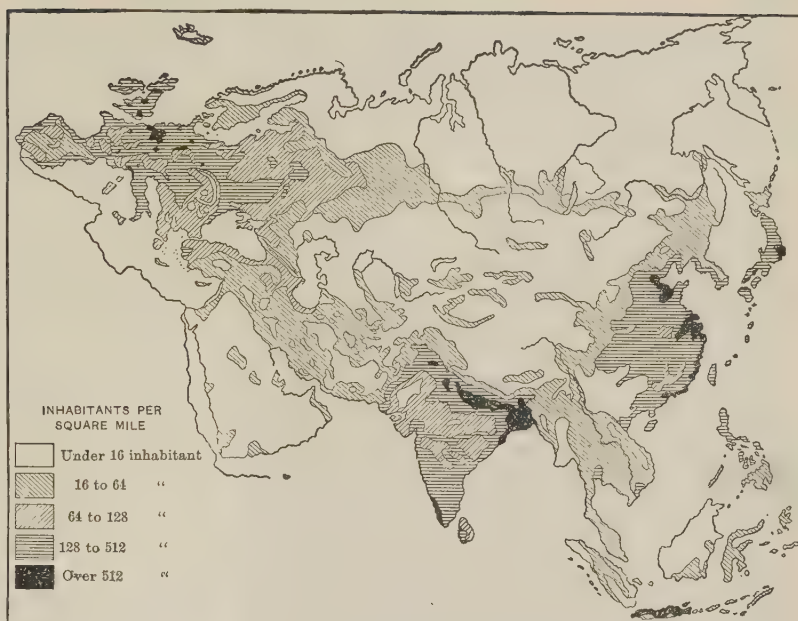


Fig. 460. Population map of Asia.

there were exiled by the Russian Czar. They were people who did not like his bad government, and said so. For this, he sent them away from their homes into Siberia, to get them out of his way.

In the highlands north of Lake Baikal, in central Siberia, the winters are colder than in any other place in the world, but in the deserts near the Caspian Sea, the summers are almost as hot as in any part of the world.

QUESTIONS

1. Locate and tell something about the best settled part of Siberia. 2. Name the farm products of this region. Which one is shipped to England? Why? 3. Why are many Siberian products similar to Russian? Canadian? 4. Ask a farmer what durum wheat is.

5. Look on the population map of Asia (Fig. 460) and see how many people per square mile live in the tundra and forest regions. 6. Compare Figures 454 and 460 and explain why the people in Europe and Asia live where they do. 7. How does the Trans-Siberian railway compare in length with railroads crossing Canada? In the amount of freight carried? Why? In the number of yearly passengers? Why?



Photo. U. S. Signal Corps

Fig. 461. A Russian selling a silver fox in a street market of Vladivostok. The fur is very valuable.

8. Why is the central-western part of Asia so dry? Where can people settle in towns in this dry region? 9. Find on the map the home of the Kirghiz people. Imagine you are the Swedish gentleman who visited them, and write an account of your visit, to your cousin. Ask your teacher to post the best letter on the bulletin board.

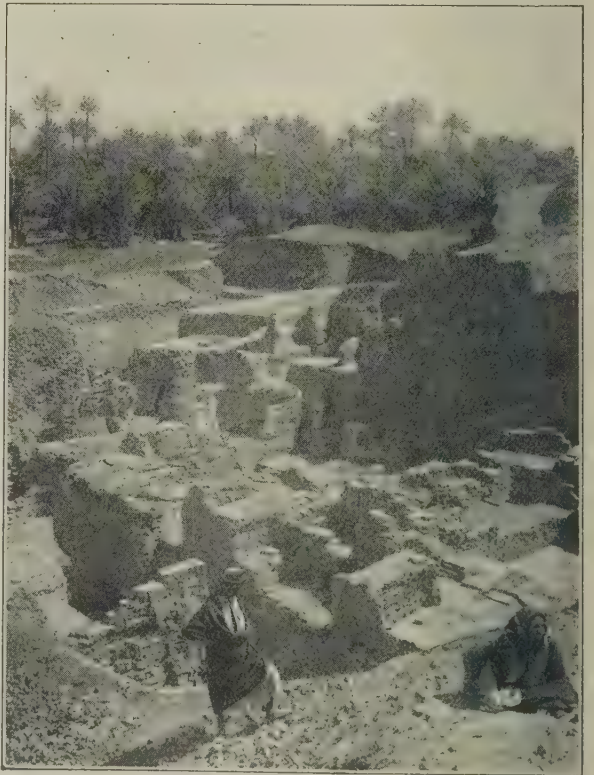
SOUTHWESTERN ASIA

475. Its ancient glory.—Southwestern Asia, the land south of the Caspian Sea and west of India, has few people in it now. But in the time of Christ, Palestine, Syria, and Asia Minor had great wealthy cities. Hundreds of years before that time, the big cities of Babylon and Nineveh, near where Baghdad now is, had wonderful temples and great libraries, good roads, and irrigation canals big enough for boats. You read of these in the Bible. Their books were made by writing with sharp pencils on smooth pieces of soft clay that were afterwards heated, just as we heat

clay to make pottery and bricks. Thousands of these books have been dug out of the ruins of these great cities. Some of them are letters written by children; others are school slates, and tell us that even six thousand years ago little boys made mistakes in their arithmetic. These are the oldest books known.

In those days of long ago the people there grew wheat, rice, and grapes, and kept cattle, sheep, and horses. Such big cities needed a great deal of food.

476. The climate.—Along the sea coast of Palestine there is rain enough to grow wheat and barley, olives and grapes, just as the farmers did in Bible times. A short distance inland, beyond the Dead Sea, the land becomes desert. It is hard even for camels to cross from Damascus to Baghdad.



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Fig. 462. Ruins of ancient Babylon. Dates from the orchards in the background are sent to America.

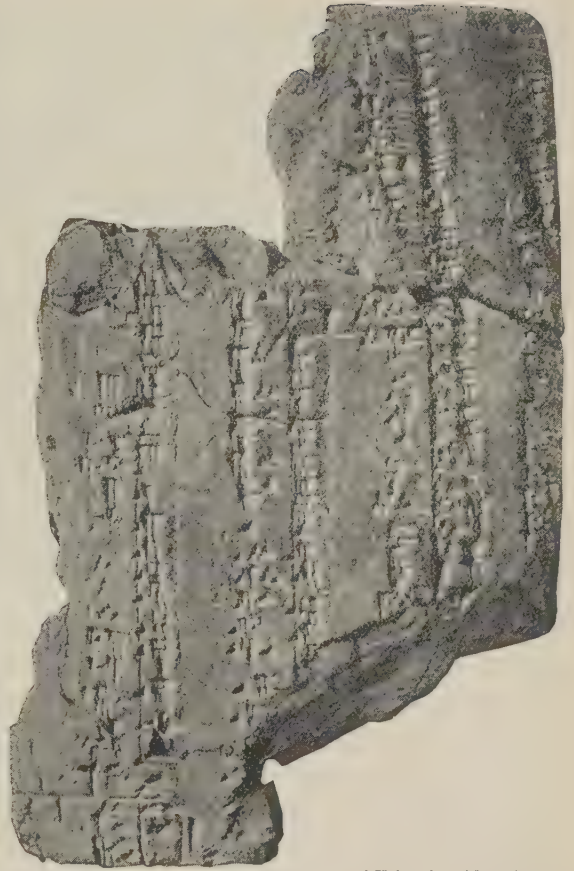
A few oases occur here and there. The climate of this whole region of southwestern Asia is much like that of southern California and Arizona, only drier.

The Dead Sea is saltier than Great Salt Lake in Utah. It lies in a deep hollow, and its shores are the lowest dry land in the world. The Jordan River flows into it, but the dry air drinks up the water faster than this river can bring it in. For this reason, its surface has lowered until now it is thirteen hundred feet lower than the Mediterranean. Great Salt Lake is also being lowered. Once, both of these bodies of water were much larger than now.



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Fig. 463. Part of a street of Babylon recently dug out. It led to King Nebuchadnezzar's throne hall.



Courtesy of University of Pa. Museum

Fig. 464. Babylonian school exercises of 6000 years ago—a multiplication table written by a teacher, and a pupil's copy beside it.

477. Surface.—The peninsulas of Arabia and Asia Minor are plateaus, with mountains near their edges. The mountains help to make the interior of these peninsulas very dry. To the east of Asia Minor are the mountains of Armenia. The melting snow from these mountains feeds the great rivers Tigris and Euphrates. These rivers have built up a large plain of soft, fine, level soil in their valleys. It is this rich, level plain, irrigated by these snow waters, that fed great cities and made Nebuchadnezzar and the other kings of Babylon and the Kings of Nineveh so powerful in Old Testament times. What book of the Bible tells about them?



Photo. Brown Bros., N. Y.

Fig. 465. Packing figs for the American market, Smyrna, Asia Minor.

478. The coming of the Turks.—About seven hundred years ago, the cruel armies of the Turks took all Asia west of Persia. They were afraid of the power of the cities, and destroyed many of them, and killed the inhabitants. Ever since that time, the people who live in western Asia have suffered from the unjust rule of the Turks. The Turkish tax gatherer takes nearly all of the crops, leaving just enough to keep the people alive. If they have any more property, the Turkish tax gatherer takes it, so the people do not try to work hard and save. It is the unjust, cruel government that has made these people poor and miserable. A just government is one of the most important things in the world. Even in a democracy, everybody has to keep trying to keep the government good. Now that the World War has driven the Turks out of the valley of the Tigris and Euphrates, these plains may again become green with crops and be the home of many men. The crops will be the same as those of Egypt.

479. People.—The Jews, Arabs, Turks, and Armenians live west of the Euphrates. Let us see where these people live.

480. Asia Minor.—Many Greeks at one time lived along the western coast of Asia Minor, especially in Smyrna. These people have been forced by the Turks to return to their homeland. Now most of the people of the peninsula of Asia Minor are Turks. The Armenians live in the mountainous country between the corners of the Black Sea, the Caspian Sea, and the Mediterranean Sea. In the Old

Testament, they were called Hittites, and they had a good kingdom four thousand years ago. They have been Christians for eighteen hundred years. Many of them have been massacred by the Turks. It is so mountainous there that very little of the land can be used for farms.



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Fig. 466. The market place in front of the Church of the Nativity, Bethlehem, Palestine.

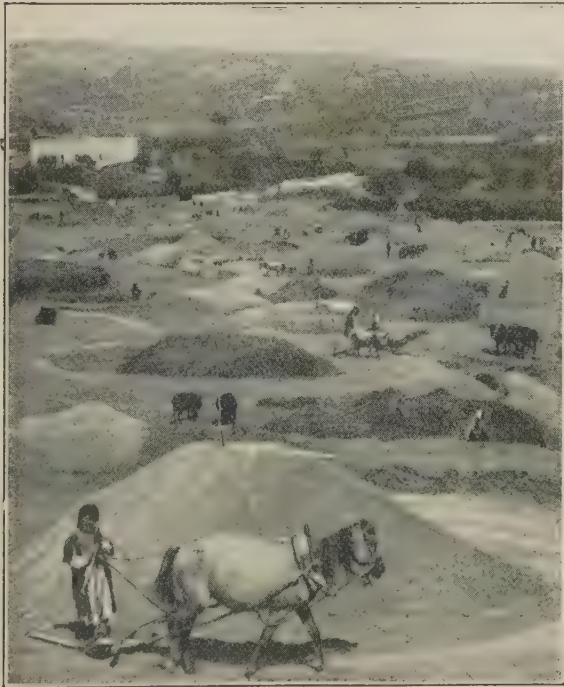
Many Armenians, who are great traders, have made their homes in Constantinople, Smyrna, and in other cities along the Mediterranean. Many have come to the United States.

There is a little agriculture along the west coast of Asia Minor. Here many figs are grown, and shipped from Smyrna to the United States. The interior of Asia Minor is so dry that most of the land is like the land of New Mexico. For this reason it is given over to flocks and herds, except where there is enough water for irrigation. There is need of many large dams and canals to save and use the water that now runs away to the sea.



Photo. Brown Bros, N. Y.

Fig. 468. A distant view of Jerusalem showing the temple area. The trees in the foreground are olive.



© Keystone View Co.

Fig. 467. Threshing wheat by tramping out the grain. Nazareth, Palestine.

481. Palestine and Syria.—The countries along the eastern coast of the Mediterranean, Palestine and Syria, are often mentioned in the Bible, and especially the cities of Antioch, the capital of Syria, and Jerusalem, the Holy City, the capital of Palestine. Here lived the kings of the Jews when these people were a great nation.

Five miles from Jerusalem is the little town of Bethlehem where Jesus was born, but it was in Jerusalem, as the Bible tells, that an important part of his life was passed, so it is natural that the Christians of the world should take a very great interest in Jerusalem. Almost all branches of the Christian Church have built churches in and about Jerusalem to mark spots visited by Jesus. It is the wish and prayer of vast numbers of the Greek (Russian) branch of the Christian Church, to make a pilgrimage to Jerusalem before their death. You will always see there old women and bearded old men, and the funerals of pilgrims who have died. Their bodies are carried through the streets, on

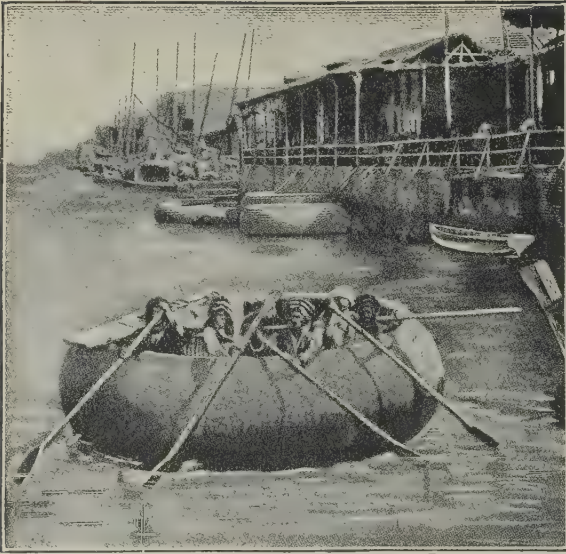


Photo. Brown Bros., N. Y.

Fig. 469. A ferry of skin-covered boats. Baghdad. What river?

open stretchers. Through the centuries so many pilgrims have been buried on the sides of the hills around Jerusalem that they lie many layers deep.

The people of Syria and Palestine today are Arabs and Jews. Like the Armenians, they have had a sad time since the Turks ruled all of the country between Persia and the Mediterranean. For hundreds of years, the people have been kept poor by unjust taxes, and often cruelly treated by the Turkish rulers. But the World War drove these rulers out of Palestine and Syria. If these countries can have peace and justice, then labor will again make them rich, as they were in Bible times, with wheat, barley, olives, alfalfa, cattle, sheep, and goats. A railroad runs from Jaffa to Jerusalem, and many people from Europe and America travel over it to visit places mentioned in the Bible.

482. Arabia.—Most of Arabia is a great desert, like the Sahara, with oases here and there, and wide stretches of country along the edges where, after the scanty

rains, a little grass grows. In these edges of the desert, the Arabs follow their flocks as Hakim does. (Sec. 415.) Men who live like this are harder to conquer than are those who live in cities and cannot so easily run away. That is why the Turks have never been able to rule these nomads or to make them pay taxes.

There is more rain on the mountain slopes of Arabia which face the Red Sea than in the interior. Along the slopes, near the city of Mocha, some of the finest coffee in the world is grown. Have you ever heard of Mocha coffee? The people of Egypt, Arabia, and Turkey think so much of it that it rarely gets to America. Like the best teas of China, it is kept at home. The people of Europe first learned about coffee from the Arabs about 1652. Can you name some other kinds of coffee?

To the north of Mocha, is Mecca, called the "Mother of Cities" the birth-

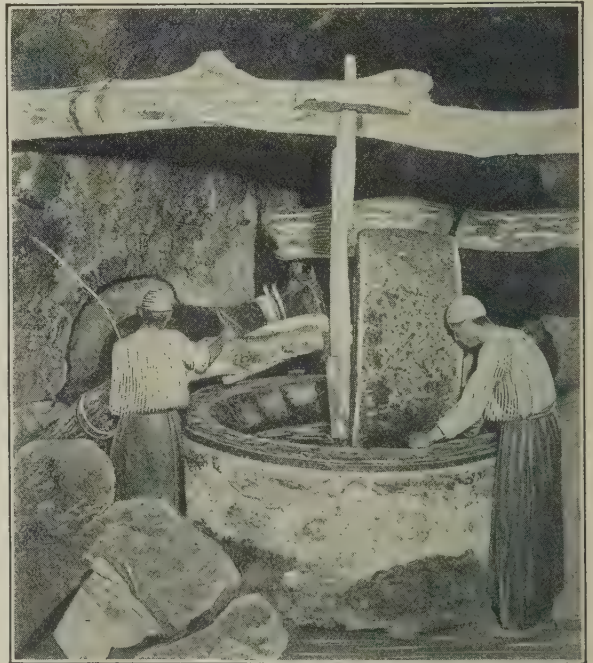


Photo. William H. Rau

Fig. 470. Crushing olives by rolling the stone around and around upon them. Palestine.

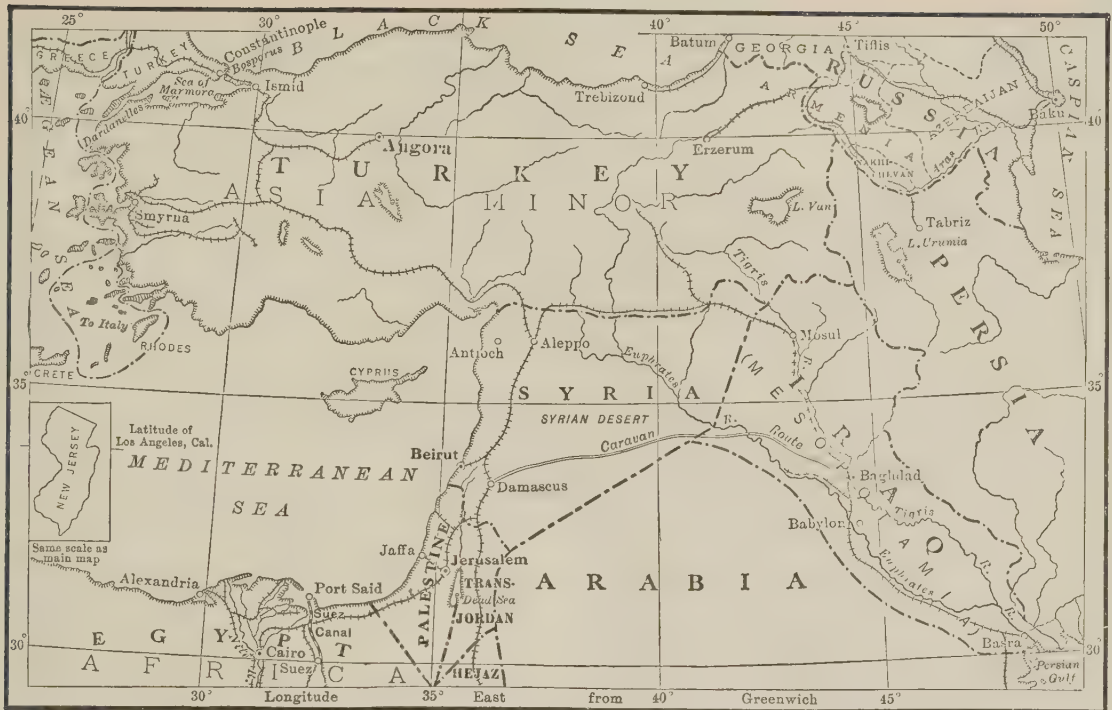


Fig. 471. Map of the countries of Southwestern Asia.

place of the prophet Mohammed, the founder of the Mohammedan religion. This is the religion of the Turks, the Arabs, and of nearly all the people living between the Sahara Desert and the Mediterranean Sea, between the Red Sea, the Black Sea and the mountains of Armenia, between the shores of Baluchistan and the Siberian wheat belt. In addition there are as many Mohammedans in India as there are people in South America. It is a part of this religion that every male Mohammedan shall, if possible, visit Mecca at some time in his life. Therefore, the city is always thronged with kneeling, worshipping visitors from many lands. There you may see Moors from Morocco, Turks from Constantinople, Persians, Kirghiz, swarthy men from India, and brown men from the East Indian Islands. The Mohammedan who has made this journey is given the title of Hajee after his return, a title

which makes him an honored man at his home.

As a result of the World War, Hejaz, the province in which Mecca is located, has been made an independent kingdom.

483. Suez Canal.—Arabia is so dry that there are large regions where no white man has been, yet along its edge is one of the world's greatest trade routes. When the French engineer, De Lesseps, succeeded in constructing the Suez Canal between the Red Sea and the Mediterranean, the ships from Europe to Asia no longer had to go around Africa. Every day ships from Europe and America pass through this canal on the way to India, China, and Japan. Sometimes vessels go out from the Atlantic by Suez and back by Panama, thus going around the world.

484. Persia.—Persia is much like Asia Minor and Greece, but it has more mountains, a higher plateau, less rain, and colder



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Fig. 472. The shaduf, an ancient method of lifting water for irrigation; used on the Euphrates and the Nile.

winters. Nomads follow their flocks over most of the country. Where the mountain streams supply water to irrigate the fields and grow food, there are a few small cities. People in these towns weave some of the finest rugs and shawls in the world. Caravans with bales of rugs, wool, and sheep skins make long journeys over the hills to the sea, where steamships carry the goods away to Europe and America.

The government of Persia is almost as bad as that of Turkey. For a long time the Shah, or king, made the laws that pleased him best. He took people's property, and even cut off their heads if he wanted to. You see he had much more power than our President has. In 1909 his people made him give them a parliament.

Along the shores of the Persian Gulf there are villages where people make their

living hunting for pearls. They go out in boats, dive down twenty or thirty feet, and bring up large oysters, in whose shells they sometimes find beautiful pearls.

485. Afghanistan.—Afghanistan is a land like Persia; high, dry, and rough. The roving herdsmen of this country are so unfriendly to white men that it is scarcely safe to visit their country. Bands of robbers sometimes go down from the Afghanistan hills and steal cattle and horses from the people of India, who live near them in the valleys of the streams which flow into the Indus River. The English, who rule that part of India, have many soldiers there to keep the robbers from making trouble. Of late the English army has begun to chase the robber bands in airplanes. The Amir, or king, of the Afghans has about the same power as the Shah of Persia.

QUESTIONS

1. What Bible stories have you read about southwestern Asia? What other stories? 2. Who owns much of this region? Why? 3. Name the disadvantages of using clay bricks for books. Why did not the ancients use paper? When was paper first made? By whom? Out of what? 4. Write an interesting fact about each of the following: Armenia, Baghdad, Jerusalem, Mecca, Jordan River, Babylon, Smyrna.

5. Explain the meanings of the following words: caravan, muezzin, Shah, Amir, aqueduct, Kirghiz. 6. Why did the ancient people wall Jerusalem? Why are such walls useless now? 7. Look through this book and draw each of the boats used by different peoples. If you cannot draw, form a partnership with a boy or girl who can, and you write the explanation—a name below the picture.

8. Examine a Turkish or Persian rug. Tell your class about rug manufacturing in Asia. 9. From your study of Europe, you know about Mediterranean climate. In what season do Mediterranean countries have rain? In what season do flowers bloom on the dry steppes of Siberia? 10. In what country in Asia is a very famous coffee grown?

INDIA

486. Ceylon.—Let us imagine ourselves getting off a steamer at the city of Colombo in the island of Ceylon. Dark-skinned people, with white turbans wound around their heads, carry from our ship cases of oil from America and cotton cloth from Manchester. Piles of boxes are waiting on the wharf to go back on the steamer. What is in the boxes? Things that grow on this island, but not in our own country—tea, copra (Sec. 245), and rubber from the plantations of Ceylon. Dark-skinned native workers and English managers have made many rich plantations on this island.

487. Southern India.—On the mainland of India, we find the summer so hot that we go about only in the morning and evening, and rest in the shade in the middle of the day. People do this in nearly all tropic countries. The houses in these villages of the tea workers have grass roofs and mud walls built with bare hands, and

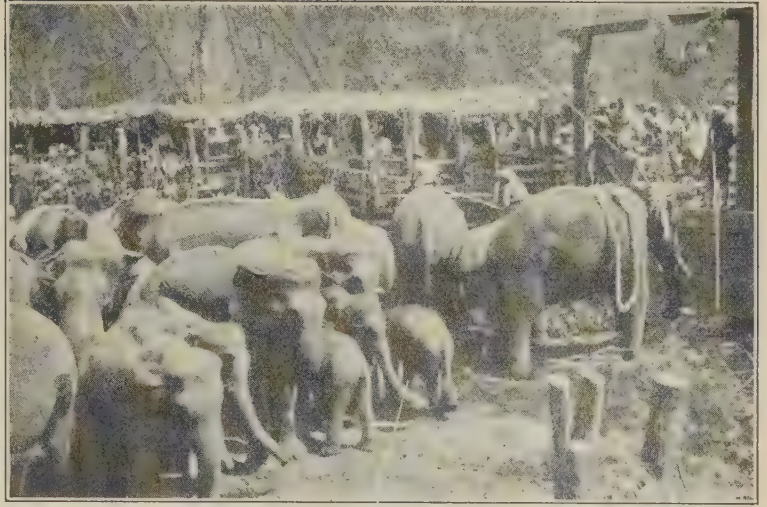


Photo. Brown Bros., N. Y.

Fig. 474. A native prince watching an elephant drive. Drivers are riding on tame elephants trying to catch the wild ones. For what purposes does the elephant use his trunk?

are shaded by tall mango trees. The children are petting strange birds in cages and eating strange fruits. Every house has its garden, with banana trees, climbing beans, and many vegetables. Everybody grows some crops about his little house. Along the dusty road, men drive carts drawn by oxen with great humps on their necks. (See Fig. 477.) Sometimes we see a boy watching a village herd of humped cows at pasture.

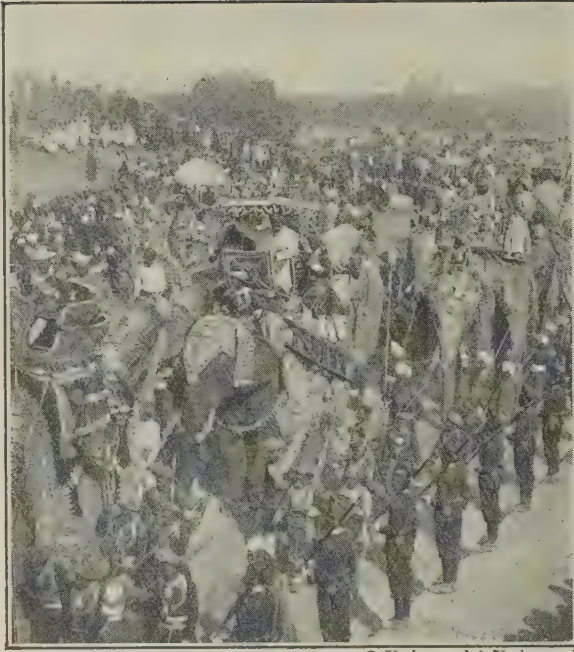
Right at the end of the fields is the green

wall of the jungle, the tropical forest, so full of bushes, vines, and creepers that we could scarcely get through it, even if we wanted to. We do not go into the jungle, for we have heard people talk of the tigers, leopards, and snakes to be found there. Snakes kill thousands of persons in India every year. We have seen this thick tropic jungle before, when we were visiting the rubber gatherers. (Sec. 269.)



Courtesy of Phila. Commercial Museum

Fig. 473. Elephants loading logs to make tea boxes. Assam, India. Elephants are so strong that they can push heavy loads up hill.



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Fig. 475. Native Indian princes parading in the city of Delhi on jewel-bedecked elephants. How does our President ride when he takes part in a parade?

It is hard work to fight back the jungle growth and make a field.

488. Central India.—For two days, we ride northward by slow train, on a railroad that the English have helped the natives of India to build. The little train takes us through forests, villages, gardens, and fields. Finally, after crossing some forested mountains, we find ourselves in the plateau of Dekkan, where is located the city of Hyderabad. (See Fig. 444.) We are surprised to learn that it is a large city, as big as San Francisco, or Buffalo. We walk along the main street. It is full of dark-skinned people. More people come. The street becomes so crowded that we cannot walk. Soldiers pass. They line up and hold the people back. To-day the Nizam, or native king, of the state of Hyderabad, is having a procession. The people of India love processions. They cheer loudly as His Royal Highness passes,

riding on an elephant, and richly decked in gold cloth and ornaments, and surrounded by many soldiers.

489. An elephant hunt.—In the United States we see elephants only in the circus, or at a zoölogical garden, but the people of India train elephants to work for them. In a lumber yard by a railroad, we see an elephant lifting big timbers and logs of wood as easily as a boy picks up apples. The driver, who sits on the elephant's neck, speaks to him, and he obeys as intelligently and as quickly as a well-trained dog. Where did the Indians get this elephant? Catching an elephant would be a great sight to see.

Let us suppose that we have the chance to go into the forest with a party of elephant hunters, to a place where they have built a stockade, or pen, with a strong fence made of logs planted deeply in the ground and tied together with chains. We will climb into a tree beside the stockade to watch the end of the hunt. The sound of shouting and drums comes out of the forest. Presently a wild elephant rushes into the stockade and tries to break it. He is followed by another and another, as a long string of five hundred men gradually draw nearer and nearer the stockade from all sides, beating drums, firing guns, yelling horribly and scaring all the elephants before them, so that the beasts run into the open side of the strong stockade, which is then closed to keep them in. After the wild elephants are captured, they are given to the elephant tamers, who conquer the wild animals by having tame elephants hold them and help the men chain them. Finally they learn that man is to be obeyed. Then they go to work in the lumber yards, pull wagons, and carry travelers who are not in too great a hurry.

490. The Ganges Valley.—It takes two days to go north by train from Hyderabad in the central highlands down to the flat plain of the Ganges River. This is a wide delta plain like that of the Mississippi. (Sec. 161.) The many branches of the Ganges have washed enough dirt down from the high Himalaya Mountains to build up a wide, level, rich plain, where people live as thickly as people can live together. The land fairly swarms with dark-skinned people, who are not quite as large as are the people of the United States, nor as black as are the people of southern India.

There is no forest here. The level plain is full of villages, gardens, fruit trees, and fields of rice, sugar cane, corn, millet, beans, and vegetables. Summer is damp and hot. We see black children, naked and with heads shaved to keep them cool. Sometimes there is one wearing a tiger's claw on a string around his neck for good luck. Often the people of India have silver nose rings, earrings, necklaces, and anklets, for they are very fond of jewelry and ornaments. Sometimes, on holidays, the children are dressed up in very pretty clothes.

As we pass by the houses we sometimes see people eating rice and beans with their fingers. But in spite of eating with their fingers, the people are very clean. In fact, it seems that they are always bathing. We pass a school where an old man is sitting on the floor with some boys around him, studying their lessons aloud. Each boy has a writing board on which he writes by dipping a sharp stick into chalk solution. This rubs off easily, when dry. The children of India are solemn little people. They do not shout and play as much as we do.

Finally, we enter Benares, the sacred city



Courtesy of Manila Commercial Museum

Fig. 476. Natives stripping bark on a cinchona plantation. Highlands of Ceylon. This tree is a native of the east slope of the Andes.

of India, beside the Ganges River. There are many beautiful temples by the river side, for the people of India have built some of the most beautiful buildings in the world. To our surprise, we see hundreds of little girls standing on the river bank, throwing their dolls into the water of the Ganges, the sacred river. Then we learn that this is the religious Festival of Dassi-wah, when all the children must part with some of their toys. On the tenth day of this festival, the little boys throw into the river all of their earthenware animals. Neither boys nor girls will have any more for three or four months. And the next year at the same Festival of Dassi-wah, they must throw some more earthenware playthings into the Ganges as a religious sacrifice to their gods.

491. The Indus Valley.—The Ganges Valley has much rain, but the valley of the lower Indus River is so dry that much of



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Fig. 477. Grinding coconuts to make oil. Ceylon.

it is a desert. It is like Egypt in having a river that brings water to it from a distant land of rain. The many branches of the Indus River rise in the Himalaya Mountains, where there are heavy rains, and even snow on the high tops. The water runs down the mountain sides and makes big rivers that flow out into the desert. Here the English have helped the natives to repair old irrigation canals and to build new ones, so that many millions of people can live on this irrigated land.

You see that India has many kinds of country—desert lands, and wet lands, low lands and high lands, and even snowy mountains standing above the hot land.

492.—*Climate*.—Most of India is in the hot or torrid zone and the rest of it, except the Himalaya Mountains, is a land without frost. In the summer a warm south wind blows from June until September or October. This wind, called a monsoon, coming from the Indian Ocean brings moisture and heavy rain in the warm summer season. So much heat and moisture make plants grow rapidly, but when the monsoon fails, as it sometimes does, it is a terrible thing, as we shall see when we read about the famines. (Sec. 495.)

493. *People and government*.—Asia is so large that its countries must be shown small on the map. We are therefore surprised to learn that India is nearly two-thirds as large as the United States, and still more surprised to find that it has more people than all North America and South America together, besides Australia and all the islands of all the seas. We must not think of India as being all one kind of country, or as having only one kind of people. It has as many kinds of people as are found in Europe. They are of all shades of color; from inky black in the south, to almost white in the northern hills near Afghanistan. Thirty-three different languages are spoken in India.

India is a part of the British Empire. The King of England is Emperor of India. Some of the states of India have their native kings, but England has control even over these native states. Other parts of India are ruled entirely by the English. For many years Calcutta was the capital of British India, but in 1911, the capital was moved back to its ancient place at Delhi.

The hot climate of India does not suit white people very well. The English who live there always try to send their children back to England, so that they can grow up well and strong. They also want their children to be educated in England.

India also includes Burma, to the south-east in the peninsula of Indo-China; and Baluchistan to the northwest, a part of the plateau of Iran. Burma is a hot country, with forests and rice fields on the level plains along the rivers. Baluchistan is mountainous, rocky, and dry, with hot summers and cold winters, such as those of Afghanistan and Persia.

The 300,000,000 people of India have

many large cities. Both Calcutta and Bombay are larger than any city in the United States, except New York, Philadelphia and Chicago. In the Indian cities one sees many temples and other beautiful buildings, some of which were built long before Columbus discovered America.

The people have strangely divided themselves into classes called castes. People of one caste will have nothing to do with the people of another caste. A man would go hungry all day rather than take food from the hand of a man of another caste. A man must belong to the caste of his father. This strange custom is a great bother to the people now that they have begun to trade and build railways.

494. Agriculture and trade.—Most of the natives of India live by agriculture. In the northwest where the rainfall is light, wheat is grown. In the years of good crops, some of this wheat is exported to England from Karachi. The people here grow for their own food millet, sorghum, and barley, three grains about which we know but little in America. To the east of Bombay, in the plateau, is the Indian cotton district, from which much cotton goes to England by way of Bombay. People in Manchester, England, not only eat bread made of Indian wheat, but they make cloth of Indian cotton and send it back to India.

In the lower Ganges Valley, the wet part of India, the farmers raise and send to the United States something that every school boy and girl has seen. Certainly everyone has seen burlap. It is a cloth made from the fibers of a reed-like plant (jute) that grows in the wet plain of the Ganges, and is shipped from Calcutta to Boston and New York, where it is made into the common gunny-sacks of which we use so many.



Courtesy of Phila. Commercial Museum.

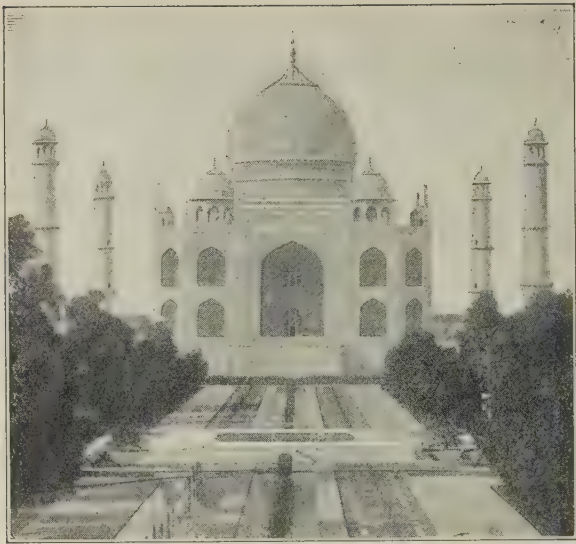
Fig. 478. After the jute stalks have been soaked in water, they are beaten to get out the fiber. Which man holds fiber in his hand?

495. Famine.—Most of the people of India are very poor, and there are so many of them that when they have poor crops they sometimes have famines, and many people starve. The government tries to help by building irrigation works, teaching the people better ways to grow crops, and by giving food in famine times. But sometimes a whole summer goes by without rain in large districts. Then there are so many to feed that starvation cannot be kept away.

496. Manufactures.—The English people, with the help of the natives, have built cotton factories in some of the larger cities, and some of the natives also have built cotton factories and jute factories. Manufacturing is now increasing in India. But most of the Indian cotton is still sent to England and Japan. Most of the cotton cloth used in India still comes from England.

QUESTIONS

1. Does your mother buy tea from China or Ceylon? Ask her why she chooses as she does.
2. What in Ceylon would interest you most: the tea gardens, the rice fields, or the cinchona



Courtesy of Phila. Commercial Museum

Fig. 479. The Taj Mahal, built by an Indian prince as a tomb for his wife. Agra, India.

plantations? 3. Name four thickly peopled delta plains, one in North America, one in Africa, two in Asia. 4. Look long at the picture of the Taj Mahal at Agra, India. It is considered one of the most beautiful buildings in the world. Do you know of other very famous beautiful buildings? 5. Name the fiber plants you have studied in this book: one in Mexico, one in the Philippines, one in India, one in the United States. Tell for what each is used. Arrange your paper like the model below:

FIBER PLANTS OF THE WORLD.

PLANT.	WHERE GROWN.	SEAPORT.	USE.

6. Between what highlands is the Ganges Valley? What cities are in this valley? Name the commercial city at the river's mouth. What is the river building there? 7. Recall other delta plains you have studied. What is true of all delta plains? of their soil? of their population? 8. How do the elephants lift the heavy logs? (Fig. 473.)

9. Tell what you know about the caste system of India. Why do we in the United States not have the same system?

10. Which is easier to clear up for a farm, a forest in India or one in Ohio? Why? 11. Where is it easier to build a house, in India or in Ohio? 12. Will more railroads help stop famines in India? 13. Why do we not have famines in the United States?

OVER THE ROOF OF THE WORLD

497. A great mountain wall.—India has the greatest mountain wall in the world. Let us take a journey over it. From the city of Benares on the Ganges, we ride northward in a train all day across the thickly peopled plain. We enter the jungle-clad hills and come to the end of the railroad. All the next day we ride up the mountain road in carriages drawn by horses. The air gets cooler. The trees in the forest are not like those on the foothills. We see oaks, such as grow in the United States.

At last we see a house with a chimney out of which smoke is coming. We are in the hills to which the Englishmen who live in the lowland cities go in the summer time to get away from the stifling heat. It is so cool here that people need fires, even in summer. Near the Englishmen's settlement, we cross the crest of a ridge as high as the top of Mount Washington. From it we can see, far away to the northward, mountain after mountain, up, up, up—up to the snow, and still up. These are the Himalayas, the highest mountains in the world, so high that no man has ever been able to climb anywhere near their tops. We see near us people on the grassy hills with herds of sheep, cattle, and goats. These hill people are of lighter color than those we left behind in the plain; and they are larger, too, for they are milk drinkers, and milk is the best food to make children grow.

It takes us a week, riding on mule back, to reach the pass that takes us through the Himalayas and out of India into Tibet. In this pass, we are higher up than the top of any mountain in the United States. Yet it is the lowest place in this range for hundreds of miles. Streams roar past us

as they rush down from the glaciers and snow fields far above.

In the pass we see the bones of dead mules, and some bundles of goods lying beside them. A caravan was overtaken here by a snowstorm two winters ago. The pack animals died in the snow, and the men were glad to get away with their lives. The packs, done up in rawhide, still wait for their owners. It is the custom of the country never to disturb a pack by the way-side, for sometime the owner may return for it.

498. The Roof of the World.—We toil on through the pass and out upon a level plain, the high plateau of Tibet. This plain, called the Roof of the World, lies north of the Himalaya Mountains. These shut off the winds so that there is little rain north of them. The air is cold and raw. We have to bundle up in extra clothes and wear mittens. There are no trees; we see small flocks of sheep, but their herders (Tibetans) are yellow like the Chinese, not dark like the people of India. As we travel along on our mules, we do not see a village for days. Once in a while we see a few shepherds, with their tents pitched on the high plain. We wonder how they can live in such cold, for even in summer the wind bites our faces.

In ten days, traveling twenty miles a day on mule back, we come to the city of Lassa, the capital of Tibet. Here lives the Grand Lama, or the high priest of Buddha. He is the head of the Buddhist religion, the religion of many of the people in China. The big buildings we see are monasteries where religious men of the Buddhist

religion spend their lives saying prayers.

The farmers near Lassa have no horses or cattle, but use yaks, animals much like oxen. Yaks have hair a foot long under their bodies. This is very handy when they have to lie down in the cold snow, which covers the ground for months in the winter.

499. The source of many rivers.—Twenty days to the eastward from Lassa is the western boundary of China. A part of the way we are still on this high, cold plain. Only a few

people live there and they have to work hard to get very little. We climb down, far down, to a river in a deep valley. We cross it and then climb a mountain again. Once more down we go, and cross another river; and so on, up and down, day after day. It often takes us all day to climb one of these mountains.

500. Western China.—At the top of one ridge is a stone house. This is the frontier or boundary of China. Six Chinese



Fig. 480. Mt. Nenda in the Himalayas, 22,000 feet high. See the native stone house and the flag pole; also the timberline and the snowline.



Fig. 481. Native women going to market at the city of Lassa on the dreary plateau of Tibet. What plateau in South America is nearly as high?

soldiers, with queer old muskets, examine our baggage, and make us pay a tax, called a duty. We go on to the eastward, across rivers, up mountains, and down mountains. It seems as though we must be crossing all the rivers and all the mountains of Asia, there is so little level land. The houses are perched on the hillsides like birds' nests on a wall. Sometimes the children are tied to the doors to keep them from rolling down hill. Stone walls hold up gardens that are no bigger than a room. It is a very poor country. Our mules cannot climb the mountains. We have to leave them and walk for a few days.

As we cross the mountains, we meet a long string of men carrying big packs of tea on their backs. Since the country is too rough for caravans of animals, caravans of men must carry freight into Tibet.

After we leave the Chinese boundary, three weeks of walking brings us to the

top of a mountain range from which we see a wide valley spread out in front of us. It is the valley of the Min River. Here is one of the fine provinces of West China. Now we travel on chairs borne on the shoulders of men. That is a custom in China.

In a week we come to the capital of the province, Chengtu. The plain around the city has many canals built by a wise emperor twenty-seven hundred years before Christ. The people of the province still irrigate their little fields in the way which he showed them. There are millions of people here, and everybody seems to be at work. We see donkeys and carts carrying coal from mines in the hill-sides. Women are spinning and weaving as we pass through the busy villages. Even the children are working. China is a very busy place. Some American missionaries live in Chengtu, and we are glad to hear our own language.

In two more weeks our chair carriers brings us to the city of Chungking, on the Yangtze, the great river of China. The Yangtze is full of Chinese sailboats called junks. We hire one of these junks to take us down the famous gorge of the Yangtze.



Fig. 482. A native bridge and the barren hillside. Tibet. See also Fig. 306.

Wang, the man who owns the junk, carries his family with him; the boat is his home. Before we go aboard we buy some chickens, eggs, and rice in the market, for Wang's wife to cook for us as we travel. The current carries the boat rushing along down stream, and Wang must do some very careful steering to get us past the dangerous

rocks. Mountain walls rise on each side of the river. We are in the famous gorge of the Yangtze. Close to the bank a boat is having great difficulty going up stream against the current. A long string of men pull and tug at a rope fastened to the boat, and they slowly pull it up the river against the rushing current.

Along the face of the cliff on the other side of the river, we see American surveyors laying out a railroad. Some day the Chinese hope to build a road up this gorge, with the help of American and English engineers and machinery.

It does not take us long to whirl down the river the four hundred miles from Chungking, where we started, to Ichang at the foot of the rapids. There we find a steamboat that has come all the way from England. Can you trace its journey?

We bid Wang and his wife good bye, and now sit comfortably on the deck of the steamer as it goes down the Yangtze. In two days we pass the great city of

Hankow (Sec. 465) near the place where Li Yu, the tea grower, lives (Sec. 459). Here big cities are spread along both banks of two rivers, as they are at Pittsburgh (Fig. 195), and there are blast furnaces like those at Pittsburgh. European and American engineers showed the Chinese workmen how to build these big furnaces and

how to make iron in them as we do in America.

On down the stream we go, meeting and passing Chinese junks, little steamboats, and big steamers; looking at Chinese villages and towns along the banks; gazing across the level plain of China. (Sec. 464.) Canals, like roads, go across this plain in all directions. Villages and little garden farms stretch away as far as the eye can see across the flat, rich, irrigated land.

For a week our steamer passes down the Yangtze through this plain, stopping from time to time at cities, one of which, Nanking, is as large as Washington, D. C. At the port of Shanghai our journey ends. We have crossed Tibet, the world's highest plateau, and China, the world's most populous country.

QUESTIONS

1. From the physical maps of Europe and Asia, make as many comparisons as you can between the Alps and the Himalayas. What river and plain lies at the foot of each? What makes it possible to cross both mountains?



Fig. 483. Chinese porters carrying goods over the mountains of western China on the way to Tibet.



Fig. 484. A Chinese barber carrying his outfit from house to house.

Which mountain range is crossed more often? Why? Which is more a barrier to the cold and snow of the north? How does each range help to water the plain below? Name the important cities in the plain of the Po and of the Ganges. 2. What is the pack animal of the Himalayas? of the Andes? of the Rocky Mountains in Colorado? How is each fitted for his job? 3. Give at least four reasons why Hankow is called the Chicago of China.

4. Look again at all the pictures in Sections 497-500 and in Sections 459-467, and then write a story about one of them.

5. If you have ever climbed a high mountain, tell about it. How high was it? Did the wind blow on the top? Was it cold or hot? What did you see from the top? Write this in story form.

THE COUNTRIES OF SOUTH-EASTERN ASIA

501. Indo-China.—Indo-China is the big peninsula between the Bay of Bengal and the South China Sea. This big region is a land of brown men. The eastern part belongs to France; the western part is Burma, which, you have already learned, belongs to England; and the central part is the independent kingdom of Siam. These countries have heavy rains in summer.

Much of the land is hilly and mountainous, with large rivers flowing down from Tibet, the same ones we crossed on our hard, cold journey over the roof of the world.

Most of the country of Indo-China is covered with forests, from which the people send us teak timber, a wood much used in making the decks of steamships.

Most of the people of these three countries make their living as farmers, much as the people of India do. The chief export of all these countries is rice. It is grown in the swampy lands along the streams, and floated down in little boats to the ports of Rangoon in Burma, Bangkok in Siam, and Saigon in French Indo-China. It is then sent by shiploads to Japan, Australia, Africa, and Europe.

502. Malay Peninsula.—At the southern end of Indo-China is the Malay peninsula, with the English colony called the Straits Settlements at its southern end. The city of Singapore, on an island at the tip end of the Malay peninsula, is a great trading center for ships that come from other parts of the world to Siam, the Philippines, the East India Islands, China, and Japan. Singapore is also a great coaling station for ships going from England to China. Other coaling stations on this route are Colombo in Ceylon, Aden in Arabia, Suez, and Gibraltar. All of these coaling stations are parts of the British Empire.

503. East Indian Islands.—The many islands lying south and east of Indo-China are called the East Indies. To the north of them lie the Philippines which, you remember (Sec. 260), belong to the United States. The Netherlands claim most of the East Indies, all the way from Sumatra in the west to New Guinea in the east.

There are many interesting tribes in

these islands, one of which is the tribe of Dyaks. They live in Borneo, and have houses big enough to hold thirty or forty families. Travelers tell us that the Dyaks get along with much less quarreling than we would if we lived so close together.

Another of the East India islands is Java (Sec. 254), which is very full of people.

It has more people than all of Asia west of Afghanistan, more people than all of the United States west of the Mississippi River. The Dutch rule in Java. The rich plains are dotted with villages, like the valley of the Ganges River in India, the valley of the Yangtze in China, or the lowlands of Japan. You remember (Sec. 254) that the people of Java sell us sugar. They also send us an important medicine, quinine, which is made from the bark of a tree that grows on the hillsides of Java. (Fig. 476).

The East Indies produce nutmegs, cloves, pepper, and other spices. They were the first articles of trade that came from these islands. It was to find a new way to the land of spices that Columbus made his great journey.

QUESTIONS

1. What makes the location of Singapore important? 2. Where do ships come from that pass eastward through these narrow straits? 3. Why are Gibraltar, Aden, and Colombo important? Locate them. 4. Point out the route the cases of American oil (Fig. 485) take from New York to the Celebes Islands; from San Francisco to these islands. 5. What products from Indo-China, Siam, and Burma are very valuable to the world? 6. Name and locate the chief East Indian islands. Point to them from your home. 7. If you traveled from the mouth of the Danube River north of the Black Sea and the Caspian Sea, and on into Asia till you

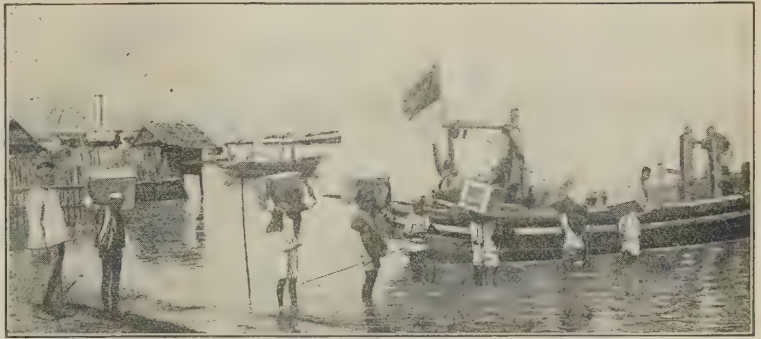


Photo. Brown Bros., N. Y.

Fig. 485. Loading cases of American oil into a native boat. Macassar, Celebes.

reached the high mountains, why would you not know when you left Europe unless you saw a boundary marker? (Examine Fig. 440 for your answer.) 8. In what part of Asia do all the large rivers rise? What three rivers flow north into the Arctic Ocean? What two east into the Pacific? What four flow southward? 9. Name two rivers of western Asia that never reach the sea. 10. Write a sentence about high mountains being a barrier to rainfall. Give an illustration from Asia. 11. Why is Asia thickly peopled around the edge and thinly peopled in the interior? Of what other continent is this true? 12. What countries of Asia interested you most? What would you like best to see there? 13. What countries are inhabited by the yellow race? the brown race? What countries have European white men taken possession of? 14. List the products sent from Asia to the United States. 15. How many times larger is Asia than North America? (Reference Table.) 16. How many times more people in Asia than in North America?

17. In which hemisphere are the Spice Islands? Name five spices which you use. Bring specimens of all the spices you can collect, and make a permanent collection for your school-room. Put each in a paper box or small glass candy jar, and label neatly. 18. What valuable medicine is obtained in Java? How is it gathered (Fig. 476)? What are the Englishmen doing there? How do they protect their heads from the sun? How do the natives? 19. What countries of Europe and North America have possessions in southeastern Asia?

20. Name and locate the countries in Southeastern Asia. 21. Which are controlled by European countries? Name their owners. Which is independent?

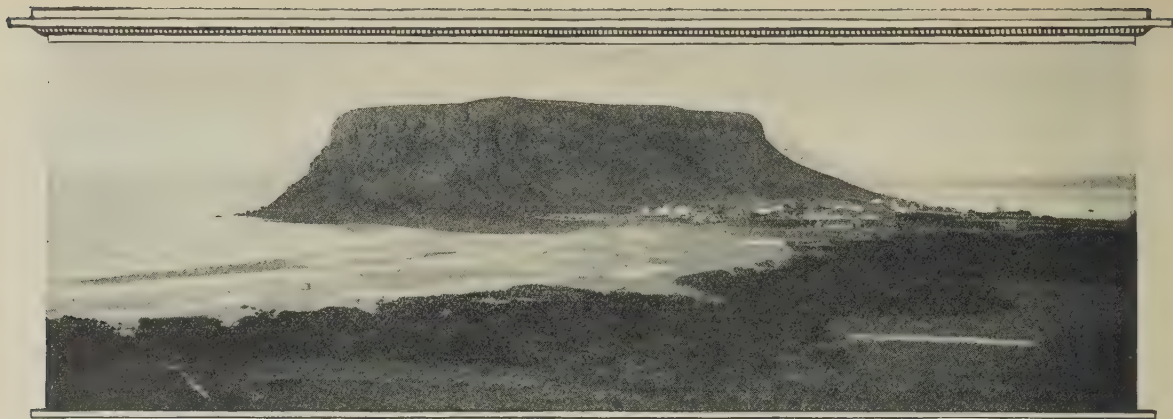


Photo. Publishers' Photo Service

Fig. 486. "The Nut," a circular mountain near Stanley, Tasmania.

AUSTRALASIA

AUSTRALIA AND THE PACIFIC ISLANDS

504. Size, climate and seasons of Australia.—Australia is the smallest of the six continents. Sometimes it is called an island. It is almost exactly the same size as the United States. It is a strange continent. The climate in the northern part is hot and wet like that of parts of northern South America. The climate of the central and western parts is very dry, so dry that it is a desert. Some parts of it have not yet been explored, although brave men have lost their lives trying to cross it. To aid them in desert travel the white men have recently brought camels from Africa.

The southwestern corner and the part near Adelaide have a climate much like that of California and Arizona, and a part of the east coast, between the mountains and the sea, is a well-watered region like the coast of North and South Carolina.

Most of the people of Australia live in the good southeastern part where there is rain.

The seasons in Australia and New Zealand, like those in other parts of the southern hemisphere, are opposite ours. They have winter when we have summer. When frost is killing our green things, their trees and flowers are just com-



Photo. Brown Bros., N. Y.

Fig. 487. Australian natives with boomerangs and spears. Could you make a boomerang?

ing into bloom, and Christmas there comes in the middle of the hot weather, as our Fourth of July does.

505. Native black men.—When white men went from England to Australia about a hundred and fifty years ago, they found a few very queer black people living there. They had no domestic animals, no farms, no roads, no towns. Some of them are still to be seen, and they are the most stupid people in the world. Many cannot learn to count above eight, and for any higher number they just say "eighty-eight". But although these men are not very smart with their brains, they have much sharper eyes than white men. One of their games is that of following each other's tracks across sand, earth, and grass, or through forests. They get so skilful in watching for tracks that they can track wild animals across bare rock. They are employed by the Australian police department as trackers. They are also powerful throwers, and can kill a man or an animal with a club at a distance of four hundred feet. A favorite sport is throwing the boomerang, something no



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Fig. 489. Kangaroos. Why can they jump so far?

other people in all the world know how to do. The boomerang is a curved stick, which, after it has been thrown, will come back and fall near the man who threw it.

506. Wild animals and plants.—The wild animals of Australia and New Zealand are not like those of any other continent. There are no big animals, such as the deer, buffaloes, elephants, lions, or tigers of other continents. The largest animal is the kangaroo. It hops around on two legs, and the mother kangaroo carries her little ones in a pocket made in her own skin. The kangaroo's tail is very long and thick and strong, and it is used as a kind of third hind leg, so that they make very long jumps and travel rapidly.

Australian trees are as queer as are the animals. Some of the forests have trees that are as tall as the big trees of California.

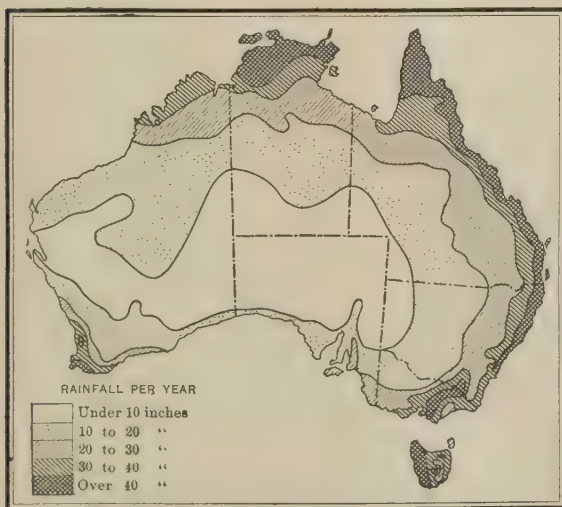


Fig. 488. Rainfall map of Australia.

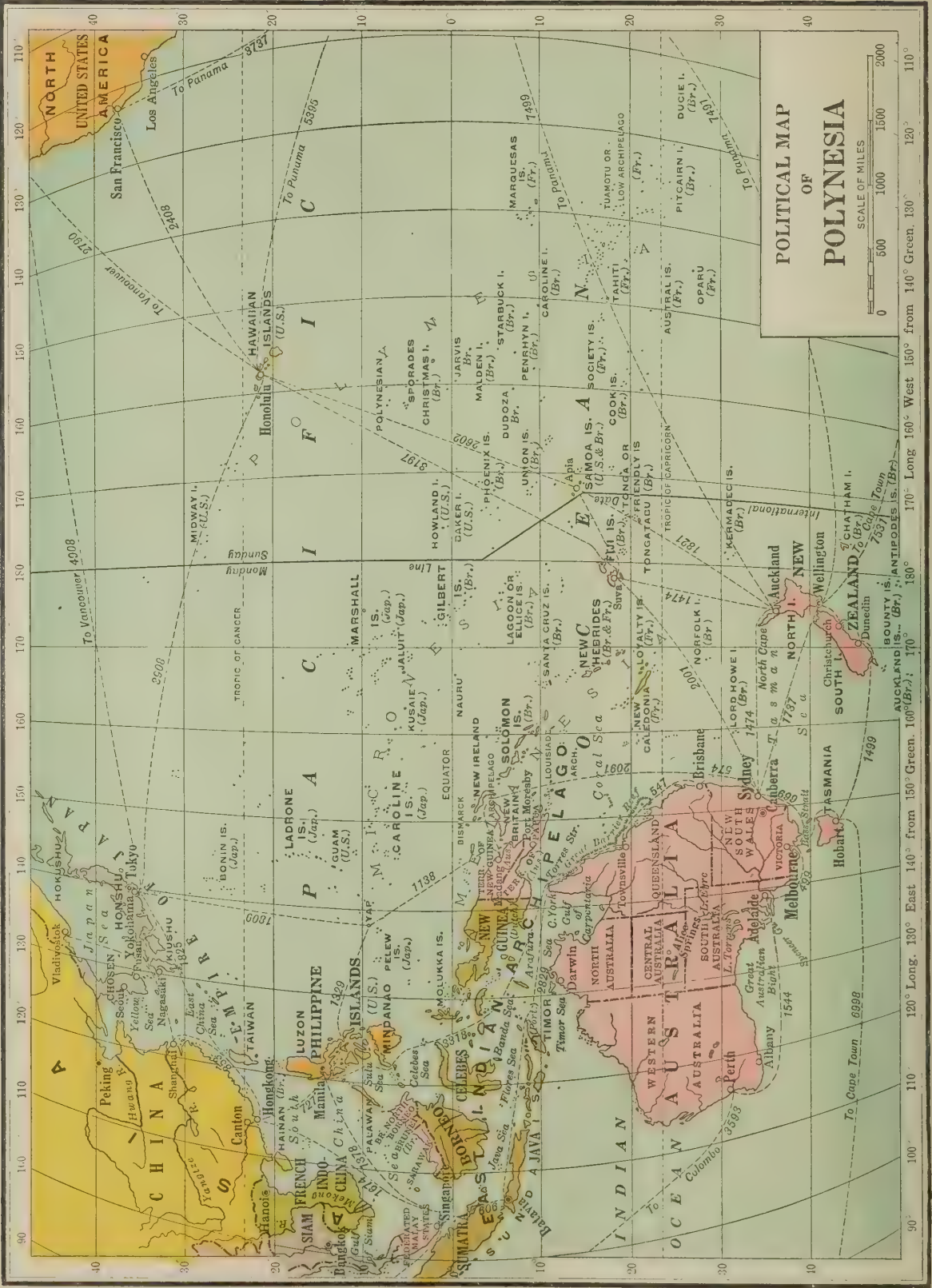


Fig. 617.

Fig. 490

Some trees shed their bark as others shed their leaves, and some have leaves that make no shade because they are set edgewise toward the sun. When leaves are set this way, the sun takes less water from them, so that a tree with such leaves can thrive better in a place where there is little rain. In some places, the ground is covered with thickets of bushes having curved thorns that catch and hold you. For this reason they are called "Wait-a-bit" bushes.

507. People and government.—By looking at a globe (Fig. 37) you can see that

Australia is very far away from England and from the other countries of Europe. No one went to Australia for two hundred years after European people had made their homes in North America. The first settlement was made at Sydney in 1788. It took from four to six months to sail to Australia from Europe. This was too long and tiresome a voyage, so no one cared

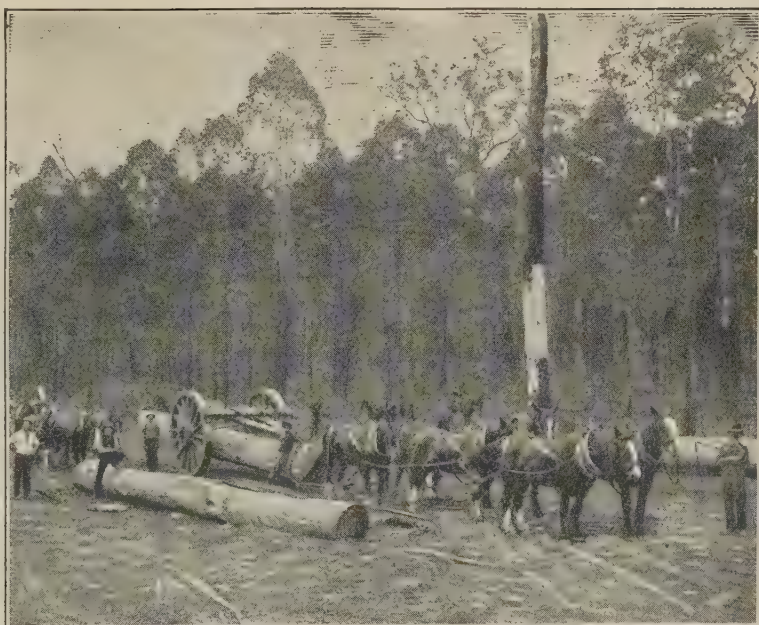


Photo. Publishers' Photo Service

Fig. 492. A West Australian forest of jarrah, a wood used in London for paving blocks.

much about going there to live. Steamships have made the journey possible in thirty or forty days, and in the last half century Australia and New Zealand have been settled rapidly by people from England, Scotland, and Ireland. However, no black people, brown people, or yellow people have gone there; the native blacks are only a few thousand in number, and thus Australia is as much of a white man's continent as is Europe itself, and more so than any continent but Europe. As the people of Australia have nearly all come from the British Isles, they speak English and have English customs.

Australia and New Zealand are British colonies. The government at London sends a governor to Australia and one to New Zealand, but



Courtesy of Phila. Commercial Museum

Fig. 491. African camels in Australia carrying supplies for men working on a desert telegraph line. Near Lake Eyre, South Australia.



Courtesy of Phila. Commercial Museum

Fig. 493. Bales of wool from a sheep ranch near Murray River, New South Wales. Where else have we read of bales of wool?

the people elect their own Parliament which makes their laws. For many years women, as well as men, have voted in both Australia and New Zealand. The British governors have about as much power in the self-governing colonies as the King of England has in Great Britain. About all they do is to attend meetings, make speeches, and be pleasant. The people of Australia and New Zealand have their government do a great many things such as build and operate their railroads, and dig artesian wells in the dry country to get water for sheep to drink. The Australians and New Zealanders are proud to be a part of the British Empire. During the World War, they sent large armies of very brave men to France to help the mother country.

The eight states of Australia, called New South Wales, Queensland, Victoria, North Australia, Central Australia, South Australia, and Western Australia, with Tasmania, an island to the south of it, have formed one government, called the Commonwealth of Australia, which is very much like that of Canada. New Zealand is entirely independent of Australia.

508. Agriculture.—Australia lies almost entirely in the region of the southeast winds. These bring heavy rain to the

eastern coast, but a mountain range, called the Great Dividing Range, a short distance inland, shuts off the moist winds from the interior and makes it dry. (Fig. 496.) There is some dairy farming in the moist country between the mountains and the sea, and also beyond the Great Dividing Range. There is a narrow belt of wheat land west of the mountains in Vic-

toria and New South Wales, and a shorter one along the slopes of the mountains near Spencer Gulf. Wheat is regularly exported to England, but these wheat belts are not wide, because the rainfall becomes less farther inland. Beyond the wheat belt is a wide belt of country where there is enough grass to make it a good place for sheep. For hundreds of miles, we find the herders with their big flocks, going from place to place as they do in our own Plateau States (Sec. 111), where much of the country is like this part of Australia.

Australia has more sheep than the United States, and also large herds of cattle.



Fig. 494. Railroad map of Australia.

Sheep and cattle are her greatest wealth. The chief exports are wool, skins, meat, butter and cheese. Shiploads of beef and mutton from Australia and New Zealand, frozen hard as bones, go to Great Britain in refrigerator steamships.

One great trouble about raising sheep in Australia is the plague of rabbits. These furry little fellows will eat the grass that sheep need. When the English went to Australia, they took pet rabbits with them. Some of the pets got away, and as there were no wolves or foxes to eat them, and no snow or cold winter to starve them, they increased very rapidly. Every mother rabbit has four or five families a year; so there were soon millions and millions of rabbits eating up the grass, until whole fields were bare, and there was nothing for the sheep to eat. In our own western country, the shepherd is busy keeping foxes, wolves, and wildcats from catching little lambs, but the millions of rabbits in Australia run swiftly and hide in their holes, and are harder to kill than wolves. Wire fences as long as from New York to Cleveland have been built to keep the Australian rabbits away from the sheep pastures. Now that meat is scarce and costly, the people have begun to catch the

rabbits and send them to Europe for food. Tons of them were sent to England during the World War, along with the frozen sheep and frozen beef. Canned rabbit is now an export. You may be surprised to know that fine felt hats are made of rabbit fur, most of which comes from Australia.



Fig. 495. Coconut palms and many-rooted mangrove trees on the shore of one of the Pacific Islands.

Courtesy of Putnam & Valentine

Drought is another trouble for the sheep farmers. At times there are two or three dry years in succession. This makes the pastures fail, and sometimes the sheep die by millions.

509. Mining.—

Australia has many deep mines, from which gold and zinc are dug. Some of these mines are in places where so little rain falls that drinking water is very hard to get. Coolgardie, a gold mining town in West Australia, is supplied by a pipe line longer than the distance from New

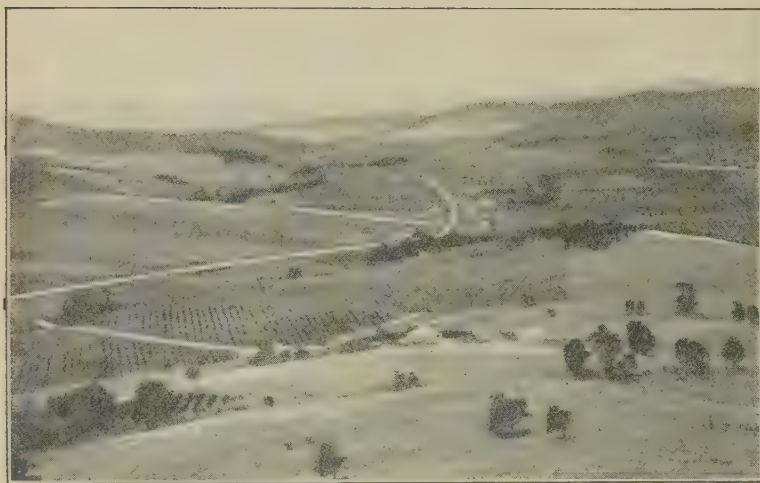
York City to Richmond, Virginia. This pipe carries water from a stream near the coast, over the coast hills, and far out into the desert. Several large pumping engines along the line lift the water up and keep it moving.

510. Cities.—The chief ports of Australia are Adelaide, Melbourne, and Sydney. They are prosperous large cities, something like San Francisco. Melbourne is at present the capital of the Australian Commonwealth, but a new city called





Fig. 497. Relief Map of Australia and neighboring islands.



© Publishers' Photo Service

Fig. 498. Farmhouses and orchards in the beautiful Bagdad Valley, Tasmania. Why do these orchards bloom in October?

Canberra is being built for the national capital. Sydney, the largest city, is about the size of Boston or Baltimore.

511. New Zealand.—The British colony of New Zealand is about fourteen hundred miles southeast of Australia, and is composed of two large islands and many smaller ones. The two main islands are about as large as New York and Pennsylvania together. As in Australia, the people are much like those of England. They have a very good government and fine schools, and, like the people of Australia, are very highly civilized.

The natives of New Zealand are called Maoris. They came there in canoes several hundred years ago from islands far away to the northward in the Pacific Ocean. They are large, strong, brown-skinned people. They are intelligent and have learned the ways of the white men, and some of them have been members of the New Zealand Parliament.

In the north island of New Zealand there is a wonderful geyser field. Where else have you heard about geysers?

New Zealand is nearer the South Pole

than is Australia, so that it is colder. It also has more rain than has Australia. The climate is like that of the coast of Washington or British Columbia. The pastures of New Zealand are green and rich. There are large flocks of sheep, and many farmers keep dairy cows. Butter and cheese are sent to England, as is also milk that has been dried to a powder. Dried milk will easily keep for a long time and does not take up much space.

512. Trade.—Most of the trade of Australia and New Zealand is with the mother country, to which food and raw materials are sent, and from which comes every kind of manufacture you could name.

Australian wool is the finest in the world, and much of the fine woolen cloth in American suits and overcoats did its first work on the backs of sheep on the wide plains of Australia. There is one steamship line



Fig. 499. Map showing where sheep are grown in Australia. Each dot stands for 10,000 sheep. (Sec. 508.)

from San Francisco to Australia, several from New York, and many from England.

513. Islands of the Pacific Ocean.—The Pacific Ocean is as large as any other two oceans. It is as large as all the continents put together. Look at a globe and at Fig. 490, and see how many times you could put Australia into the Pacific Ocean. Many islands are scattered around in this ocean. We have already read about some of these islands—the Philippines (Sec. 260) and the Dutch East Indies. The map shows that several countries own other islands in the Pacific. At Tahiti and Fiji, steamships sometimes stop to get coal. This ocean was first explored by an English sailor named Captain Cook. He made several voyages there about the time that the United States became an independent nation.

Some of these Pacific Islands are round, like a ring, and are called atolls. They are made of coral rock and are only a few feet above the sea level. Though the soil is



Photo. Brown Bros., N. Y.

Fig. 501. Town hall and markets, Sydney, Australia. Look at Fig. 500, and see what a difference the white man has made.

very thin, coconut trees thrive on them. Others, such as Hawaii and the East Indies, have high mountains with large forests and jungle. New Guinea, north of Australia, is the largest of the Pacific Islands. (To what countries does it belong?) We do not know much about this island, nor about two groups called the Solomon Islands and the New Hebrides. It is not very safe to go to some of these islands, because some of the people there have the unpleasant habit of eating strangers. Sometimes they eat their own neighbors. In the fall of 1919, they ate up a French

coconut grower. An Australian warship went up there and fired shells into the cannibals' village. American and English missionaries have risked their lives to go to these cannibals to teach them better ways of living. A few of these missionaries have been killed, but most of them have succeeded with their work. Returned missionaries say that in a short time these cannibals when patiently



Photo. Brown Bros., N. Y.

Fig. 500. A native war canoe in the Solomon Islands.



Fig. 502. The beautiful Piccadilly Valley in Southern Australia.

Courtesy of Wm. Thompson

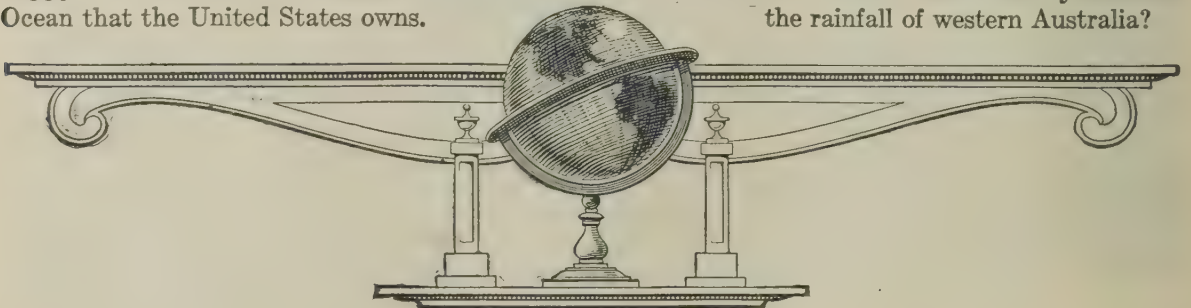
taught become kind people and good neighbors, and instead of eating each other, they go to work in coconut plantations and help to make copra, which trading vessels carry away to Europe.

QUESTIONS

1. Why have white men brought the camel to Australia? (Fig. 491.) 2. Describe the kangaroo. (Fig. 489.) Hunt for a picture of a mother kangaroo carrying her young in her pouch. 3. What trees grow well on many Pacific Islands? What do the natives prepare from trees for the American and European markets? 4. In what direction is Australia from Japan? from your home? Walk toward it. 5. What in the Bagdad Valley (Fig. 498) looks as if the farmers were prosperous and happy? 6. Name several islands in the Pacific Ocean that the United States owns.

7. Why was Australia not settled until about two hundred years later than America? 8. What language is spoken there? Why? 9. Tell about the native plants, animals, and people. 10. How many degrees (nearly) is Sydney east of London? Manila? 11. By what routes could you go from London to Sydney? On each, where would you cross the equator? How long would the journey last?

12. Are the climates of southeast Australia and South Africa alike? In each case what keeps the rain from the interior? 13. Where are the deserts in North America? in South America? in Asia? in Africa? in Australia? Why are there none in Europe? 14. Locate New Zealand. Give its direction and distance from Australia. Tell about its people, government, schools, and products. 15. Name two parallels which pass through both Australia and south Africa? 16. On the map of Australia locate the rivers. What does this tell you about the rainfall of western Australia?



REFERENCE TABLES

I. THE EARTH

Diameter of earth at equator (miles).....	7,926
Diameter of earth at poles (miles)...about	7,900
Earth's surface (square miles).....	196,940,000
Total area of oceans (square miles).....	141,486,000

II. THE CONTINENTS

	AREA IN SQUARE MILES	POPULATION
Africa.....	11,600,000	142,750,000
Asia.....	17,200,000	872,500,000
Australia.....	2,975,000	*5,437,000
Europe.....	3,870,000	464,680,000
North America.....	8,500,000	150,000,000
South America.....	7,570,000	56,400,000

III. THE LEADING COUNTRIES OF NORTH AND SOUTH AMERICA

North America:

	AREA	POPULATION
United States (including Alaska but not the is- land dependencies).....		
(1920).....	3,617,673	105,765,519
Canada.....	3,729,700	8,788,000
Mexico.....	767,300	15,502,000
Nicaragua.....	49,200	638,000
Guatemala.....	48,300	2,004,000
Honduras.....	44,300	637,000
Panama.....	31,900	401,000

South America:

	AREA	POPULATION
Brazil.....	3,275,600	30,645,000
Argentina.....	1,153,400	8,699,000
Bolivia.....	514,200	2,890,000
Peru.....	722,500	4,500,000
Colombia.....	440,800	5,855,000
Venezuela.....	398,900	2,412,000
Chile.....	289,800	3,870,000
Ecuador.....	118,600	2,000,000
Paraguay.....	75,700	1,000,000
Uruguay.....	72,200	1,495,000

IV. THE MOST IMPORTANT LAKES OF THE WORLD

LAKE	AREA IN SQUARE MILES	ELEVATION IN FEET
Caspian.....	169,000	†85
Superior.....	30,829	602
Victoria.....	30,000	4,000
Aral Sea.....	26,900	160
Huron.....	22,322	582
Michigan.....	21,729	582
Nyassa.....	14,000	1,500

* 1919.

LAKE	AREA IN SQUARE MILES	ELEVATION IN FEET
Tanganyika.....	12,650	2,800
Baikal.....	12,500	1,312
Great Bear.....	11,200	200
Great Slave.....	10,100	over 650
Chad.....	10,000	800-900
Erie.....	9,990	573
Winnipeg.....	9,400	710
Balkash.....	7,800	780
Ontario.....	7,104	247
Ladoga.....	7,000	60
Nicaragua.....	3,600	110
Titicaca.....	3,300	12,875
Great Salt.....	2,360	4,218
Manitoba.....	1,850	810
Dead Sea.....	370	†1,310

V. HEIGHTS OF SOME MOUNTAIN PEAKS FEET

	FEET
Mount Everest, Himalaya Mountains, Asia....	29,002
Godwin-Austen, Himalaya Mountains, Asia....	28,250
Aconcagua, Andes Mountains, S. A.....	22,868
Mt. McKinley, Alaskan Mountains, Alaska....	20,300
Mt. Logan, Coast Ranges, Canada.....	19,539
Mt. Kilimanjaro, Africa.....	19,321
Orizaba, Sierra Madre, Mexico.....	18,564
Mt. Elbruz, Caucasus Mountains, Russia....	18,470
Mt. St. Elias, Coast Ranges, Alaska.....	18,025
Mont Blanc, Alps Mountains, France.....	15,781
Mt. Whitney, Sierra Nevada Mountains, Cali- fornia.....	14,898
Mt. Rainier, Cascade Mountains, Washington..	14,526
Mt. Shasta, Sierra Nevada Mountains, California	14,380
Pikes Peak, Rocky Mountains, Colorado.....	14,108
Mauna Loa, Hawaiian Islands.....	13,675
Fujiyama, Japan.....	12,390
Mt. Mitchell, Appalachian Mountains, North Carolina.....	6,711
Mt. Washington, White Mountains, New Hamp- shire.....	6,293

VI. THE SIXTEEN LONGEST RIVERS OF THE WORLD

NAME	COUNTRY	LENGTH IN MILES	Basin Area IN Sq. Mi.
Missouri-Mississippi	United States	4,200	1,250,000
Amazon.....	South America	4,000	2,500,000
Nile.....	Africa.....	3,700	1,600,000
Congo.....	Africa.....	3,300	1,500,000
Yangtze.....	China.....	3,300	500,000
Niger.....	Africa.....	3,000	600,000
Hwang.....	China.....	2,600	540,000
Lena.....	Siberia.....	2,550	600,000

† Below sea level.

REFERENCE TABLES

NAME	COUNTRY	LENGTH IN MILES	BASIN AREA IN Sq. MI.
Ob.....	Siberia.....	2,500	920,000
Parana-Plata.....	South America	2,300	1,250,000
Mackenzie.....	Canada.....	2,400	440,000
Volga.....	Russia.....	2,300	500,000
Yukon.....	Alaska.....	2,050	440,000
St. Lawrence.....	North America	2,000	350,000
Indus.....	India.....	2,000	320,000
Danube.....	Europe.....	1,725	300,000

VII. AREA AND POPULATION OF THE UNITED STATES AND OUTLYING POSSESSIONS, CENSUS OF 1920

STATE	TOTAL AREA IN Sq. MI.	WATER AREA IN Sq. MI.	POPULATION
Alabama.....	51,998	719	2,348,174
Alaska.....	590,884	...	54,899
Arizona.....	113,956	146	334,162
Arkansas.....	53,335	810	1,752,204
California.....	158,297	2,645	3,426,861
Colorado.....	103,948	290	939,629
Connecticut.....	4,965	145	1,380,631
Delaware.....	2,370	405	223,003
District of Columbia..	70	10	437,571
Florida.....	58,666	3,805	968,470
Georgia.....	59,265	540	2,895,832
Guam.....	210	...	13,275
Hawaii.....	6,449	...	259,208
Idaho.....	83,888	534	431,866
Illinois.....	56,665	622	6,485,280
Indiana.....	36,354	309	2,930,390
Iowa.....	56,147	561	2,404,021
Kansas.....	82,158	384	1,769,257
Kentucky.....	40,598	417	2,416,630
Louisiana.....	48,506	3,097	1,798,509
Maine.....	33,040	3,145	768,014
Maryland.....	12,327	2,386	1,449,661
Massachusetts.....	8,266	227	3,852,356
Michigan.....	57,980	500	3,668,412
Minnesota.....	84,682	3,824	2,387,125
Mississippi.....	46,865	503	1,790,618
Missouri.....	69,420	693	3,404,055
Montana.....	146,997	866	548,889
Nebraska.....	77,520	712	1,296,372
Nevada.....	110,690	869	77,407
New Hampshire.....	9,341	310	443,083
New Jersey.....	8,224	710	3,155,900
New Mexico.....	122,634	131	360,350
New York.....	49,204	1,550	10,385,227
North Carolina.....	52,426	3,686	2,559,123
North Dakota.....	70,837	654	646,872
Ohio.....	41,040	300	5,759,394
Oklahoma.....	70,057	643	2,028,283
Oregon.....	96,699	1,092	783,389
Panama Canal Zone...	436	...	21,650

STATE	TOTAL AREA IN Sq. MI.	WATER AREA IN Sq. MI.	POPULATION
Pennsylvania.....	45,126	294	8,720,017
Philippine Islands....	115,026	...	10,607,872
Porto Rico.....	3,435	...	1,309,172
Rhode Island.....	1,248	181	604,397
Samoa, American.....	77	...	8,056
South Carolina.....	30,989	494	1,683,724
South Dakota.....	77,615	747	636,547
Tennessee.....	42,022	335	2,337,885
Texas.....	265,896	3,498	4,663,228
Utah.....	84,990	2,806	449,396
Vermont.....	9,564	440	352,428
Virginia.....	42,627	2,365	2,309,187
Virgin Islands of the U. S.....	149	...	*26,051
Washington.....	69,127	2,291	1,356,621
West Virginia.....	24,170	148	1,463,701
Wisconsin.....	56,066	810	2,632,067
Wyoming.....	97,914	366	194,402
Total.....	3,743,455		†118,010,803

VIII. THE LARGEST CITIES OF THE WORLD—500,000 AND OVER

	POPULATION
New York (boroughs), U. S. A.....	5,620,048
London (boroughs), England.....	4,483,249
Paris, France.....	2,906,000
Chicago, U. S. A.....	2,701,705
Leningrad (Petrograd), Russia.....	1,067,000
Tokyo, Japan.....	2,173,000
Berlin, Germany.....	3,804,000
Vienna, Austria.....	1,841,000
Philadelphia, U. S. A.....	1,823,779
Moscow, Russia.....	1,511,000
Buenos Aires, Argentina.....	1,674,000
Osaka, Japan.....	1,253,000
Hankow, China.....	1,500,000
Calcutta, India.....	1,263,000
Rio de Janeiro, Brazil.....	1,158,000
Glasgow, Scotland.....	1,034,000
Constantinople, Turkey.....	1,000,000
Peking, China.....	1,300,000
Shanghai, China.....	1,100,000
Detroit, U. S. A.....	993,678
Bombay, India.....	1,173,000
Hamburg, Germany.....	986,000
Warsaw, Poland.....	936,000
Canton, China.....	950,000
Budapest, Hungary.....	929,000
Birmingham, England.....	919,000
Tientsin, China.....	839,000
Cleveland, U. S. A.....	796,841

* 1917.

† Including military and naval service abroad.

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	POPULATION		POPULATION
Cairo, Egypt.....	791,000	Leipsic, Germany.....	636,000
St. Louis, U. S. A.....	772,897	Pittsburgh, U. S. A.....	588,343
Boston, U. S. A.....	748,060	Barcelona, Spain.....	761,000
Liverpool, England.....	803,000	Los Angeles, U. S. A.....	576,673
Baltimore, U. S. A.....	733,826	Marseille, France.....	586,000
Manchester, England.....	731,000	Prague, Czechoslovakia.....	676,000
Naples, Italy.....	698,000	Dresden, Germany.....	588,000
Hangchow, China.....	730,000	Bangkok, Siam.....	541,000
Ningpo, China.....	700,000	Changsha, China.....	550,000
Milan, Italy.....	663,000	Lyon, France.....	562,000
Amsterdam, Netherlands.....	644,000	Madras, India.....	523,000
Sydney, Australia.....	857,000	Cologne, Germany.....	641,000
Fuchow, China.....	650,000	Breslau, Germany.....	528,000
Copenhagen, Denmark.....	666,000	Buffalo, U. S. A.....	506,775
Madrid, Spain.....	814,000	San Francisco, U. S. A.....	506,676
Munich, Germany.....	631,000	Rotterdam, Netherlands.....	511,000
Melbourne, Australia.....	784,000	Hyderabad, India.....	500,000
Rome, Italy.....	591,000	Suchau, China.....	550,000

IX. CITIES IN THE UNITED STATES, 35,000 AND OVER

CITY	POPULATION, 1920	CITY	POPULATION, 1920	CITY	POPULATION, 1920
New York, N. Y.....	5,620,048	Omaha, Neb.....	191,601	Kansas City, Kan.....	101,177
Chicago, Ill.....	2,701,705	Worcester, Mass.....	179,754	Yonkers, N. Y.....	100,176
Philadelphia, Pa.....	1,823,779	Birmingham, Ala.....	178,806	Lynn, Mass.....	99,148
Detroit, Mich.....	993,678	Syracuse, N. Y.....	171,717	Duluth, Minn.....	98,917
Cleveland, Ohio.....	796,841	Richmond, Va.....	171,667	Tacoma, Wash.....	96,965
St. Louis, Mo.....	772,897	New Haven, Conn.....	162,537	Elizabeth, N. J.....	95,783
Boston, Mass.....	748,060	Memphis, Tenn.....	162,351	Lawrence, Mass.....	94,270
Baltimore, Md.....	733,826	San Antonio, Tex.....	161,379	Utica, N. Y.....	94,156
Pittsburgh, Pa.....	588,343	Dallas, Tex.....	158,976	Erie, Pa.....	93,372
Los Angeles, Calif.....	576,673	Dayton, Ohio.....	152,559	Somerville, Mass.....	93,091
Buffalo, N. Y.....	506,775	Bridgeport, Conn.....	143,555	Waterbury, Conn.....	91,715
San Francisco, Calif.....	506,676	Houston, Tex.....	138,276	Flint, Mich.....	91,599
Milwaukee, Wis.....	457,147	Hartford, Conn.....	138,036	Jacksonville, Fla.....	91,558
Washington, D. C.....	437,571	Scranton, Pa.....	137,783	Oklahoma City, Okla.....	91,295
Newark, N. J.....	414,524	Grand Rapids, Mich.....	137,634	Schenectady, N. Y.....	88,723
Cincinnati, Ohio.....	401,247	Patersqn, N. J.....	135,875	Canton, Ohio.....	87,091
New Orleans, La.....	387,219	Youngstown, Ohio.....	132,358	Fort Wayne, Ind.....	86,549
Minneapolis, Minn.....	380,582	Springfield, Mass.....	129,614	Evansville, Ind.....	85,264
Kansas City, Mo.....	324,410	Des Moines, Iowa.....	126,468	Savannah, Ga.....	83,252
Seattle, Wash.....	315,312	New Bedford, Mass.....	121,217	Manchester, N. H.....	78,384
Indianapolis, Ind.....	314,194	Fall River, Mass.....	120,485	St. Joseph, Mo.....	77,939
Jersey City, N. J.....	298,103	Trenton, N. J.....	119,289	Knoxville, Tenn.....	77,818
Rochester, N. Y.....	295,750	Nashville, Tenn.....	118,342	El Paso, Tex.....	77,560
Portland, Ore.....	258,288	Salt Lake City, Utah.....	118,110	Bayonne, N. J.....	76,754
Denver, Colo.....	256,491	Camden, N. J.....	116,309	Peoria, Ill.....	76,121
Toledo, Ohio.....	243,164	Norfolk, Va.....	115,777	Harrisburg, Pa.....	75,917
Providence, R. I.....	237,595	Albany, N. Y.....	113,344	San Diego, Calif.....	74,683
Columbus, Ohio.....	237,031	Lowell, Mass.....	112,759	Wilkes-Barre, Pa.....	73,833
Louisville, Ky.....	234,891	Wilmington, Del.....	110,168	Allentown, Pa.....	73,502
St. Paul, Minn.....	234,698	Cambridge, Mass.....	109,694	Wichita, Kan.....	72,217
Oakland, Cal.....	216,261	Reading, Pa.....	107,784	Tulsa, Okla.....	72,075
Akron, Ohio.....	208,435	Fort Worth, Tex.....	106,482	Troy, N. Y.....	72,013
Atlanta, Ga.....	200,616	Spokane, Wash.....	104,437	Sioux City, Iowa.....	71,227

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CITY ¹	POPULATION, 1920	CITY	POPULATION, 1920	CITY	POPULATION, 1920
South Bend, Ind.....	70,983	East Orange, N. J.....	50,710	Beaumont, Tex.....	40,422
Portland, Me.....	69,272	Atlantic City, N. J.....	50,707	Stockton, Calif.....	40,296
Hoboken, N. J.....	68,166	Bethlehem, Pa.....	50,358	Everett, Mass.....	40,120
Charleston, S. C.....	67,957	Huntington, W. Va.....	50,177	Wichita Falls, Tex.....	40,079
Johnstown, Pa.....	67,327	Topeka, Kan.....	50,022	West Hoboken, N. J.....	40,074
Binghamton, N. Y.....	66,800	Malden, Mass.....	49,103	Oak Park, Ill.....	39,858
East St. Louis, Ill.....	66,767	Hamtramck, Mich.....	48,615	Hamilton, Ohio.....	39,675
Brockton, Mass.....	66,254	Kalamazoo, Mich.....	48,487	Superior, Wis.....	39,671
Terre Haute, Ind.....	66,083	Winston-Salem, N. C.....	48,395	San Jose, Calif.....	39,642
Sacramento, Calif.....	65,908	Jackson, Mich.....	48,374	Springfield, Mo.....	39,631
Rockford, Ill.....	65,651	Quincy, Mass.....	47,876	Charleston, W. Va.....	39,608
Little Rock, Ark.....	65,142	Bay City, Mich.....	47,554	Dubuque, Iowa.....	39,141
Pawtucket, R. I.....	64,248	York, Pa.....	47,512	Medford, Mass.....	39,038
Passaic, N. J.....	63,841	McKeesport, Pa.....	46,781	Jamestown, N. Y.....	38,917
Saginaw, Mich.....	61,903	Highland Park, Mich.....	46,499	Waco, Tex.....	38,500
Springfield, Ohio.....	60,840	Charlotte, N. C.....	46,338	Joliet, Ill.....	38,442
Mobile, Ala.....	60,777	Newton, Mass.....	46,054	Madison, Wis.....	38,378
Altoona, Pa.....	60,331	Cedar Rapids, Iowa.....	45,566	Brookline, Mass.....	37,748
Holyoke, Mass.....	60,230	Elmira, N. Y.....	45,393	Columbia, S. C.....	37,524
New Britain, Conn.....	59,316	Pasadena, Calif.....	45,354	Lorain, Ohio.....	37,295
Springfield, Ill.....	59,183	Fresno, Calif.....	45,086	Evanston, Ill.....	37,234
Racine, Wis.....	58,593	Cicero, Ill.....	44,995	Taunton, Mass.....	37,137
Chester, Pa.....	58,030	New Castle, Pa.....	44,938	Muskegon, Mich.....	36,570
Chattanooga, Tenn.....	57,895	Galveston, Tex.....	44,255	Muncie, Ind.....	36,524
Lansing, Mich.....	57,327	Shreveport, La.....	43,874	Aurora, Ill.....	36,397
Covington, Ky.....	57,121	Decatur, Ill.....	43,818	Waterloo, Iowa.....	36,230
Davenport, Iowa.....	56,727	Woonsocket, R. I.....	43,496	Chicopee, Mass.....	36,214
Wheeling, W. Va.....	56,208	Montgomery, Ala.....	43,464	New Rochelle, N. Y.....	36,213
Berkeley, Calif.....	56,036	Chelsea, Mass.....	43,184	Williamsport, Pa.....	36,198
Long Beach, Calif.....	55,593	Pueblo, Colo.....	43,050	Auburn, N. Y.....	36,192
Gary, Ind.....	55,378	Mount Vernon, N. Y.....	42,726	Battle Creek, Mich.....	36,164
Lincoln, Neb.....	54,948	Salem, Mass.....	42,529	Council Bluffs, Iowa.....	36,162
Portsmouth, Va.....	54,387	Pittsfield, Mass.....	41,764	Hammond, Ind.....	36,004
Haverhill, Mass.....	53,884	Lakewood, Ohio.....	41,732	Quincy, Ill.....	35,978
Lancaster, Pa.....	53,150	Perth Amboy, N. J.....	41,707	East Chicago, Ind.....	35,967
Macon, Ga.....	52,995	Butte, Mont.....	41,611	Newport News, Va.....	35,596
Augusta, Ga.....	52,548	Lexington, Ky.....	41,534	Rock Island, Ill.....	35,177
Tampa, Fla.....	51,608	Lima, Ohio.....	41,326	Stamford, Conn.....	35,096
Roanoke, Va.....	50,842	Fitchburg, Mass.....	41,029	Poughkeepsie, N. Y.....	35,000
Niagara Falls, N. Y.....	50,760	Kenosha, Wis.....	40,472	Austin, Tex.....	34,876

X. THE MOST IMPORTANT EXPORTS AND IMPORTS IN THE UNITED STATES ARRANGED
IN THE ORDER OF THEIR VALUES, 1920

EXPORTS	DOLLARS	IMPORTS	DOLLARS
Cotton, raw.....	1,136,408,916	Sugar, cane.....	1,008,786,351
Iron and steel manufactures.....	1,112,773,886	Silk, raw.....	284,891,082
Wheat and wheat flour.....	821,430,244	Coffee.....	252,450,651
Petroleum, crude and refined.....	549,316,875	Hides and skins.....	243,934,226
Meat and dairy products.....	544,074,050	Rubber, crude.....	242,795,773
Tobacco, not manufactured.....	244,899,169	Wool, raw.....	126,972,088
		Coco, Crude.....	54,307,908
		Tea ¹	24,392,527
Total exports.....	8,080,818,455	Total imports.....	5,105,586,434

¹ Coco and tea, while not of as great value as some other things, are included because they are not produced at all in the United States, and have been described in this book.

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Explanation of Symbols: Geographic and proper names are indexed in black-face type, (*Aden*), other subjects in light-face, (*beet*). Map references are given by italic figures in parentheses, with or without location, as (*307 Q3*) or (*307*). The more important discussions of subjects are indicated by black-face figures, as *353*. Other references are in light-face figures, as 356. Illustrations are shown by italic figures with asterisk, as *353. All references are to page numbers.

Key to Pronunciation: âte, senâte, râre, cât, âsk, fâr, âffect, commâ; scêne, êvent, êdge, writêr, novêl; mîne; cöld, ôbey, cöld, dôg, stöpp, cômpare; ûnit, circûlate, bârn, cût, focûs; mōōn, fōōt; mound; coīn; gold; jewel; yellow; sing; child; thin; then; hw, when; zh, azure; ũ, Ger. fûr or Fr. lune; ō, Ger. schön or Fr. feu; ñ, Fr. enfant or nom; kh, Ger. ach or mich, or Sc. loch.

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GEOGRAPHY OF NEW YORK STATE

(HUMAN GEOGRAPHY BOOK I)

BY

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NEW YORK STATE

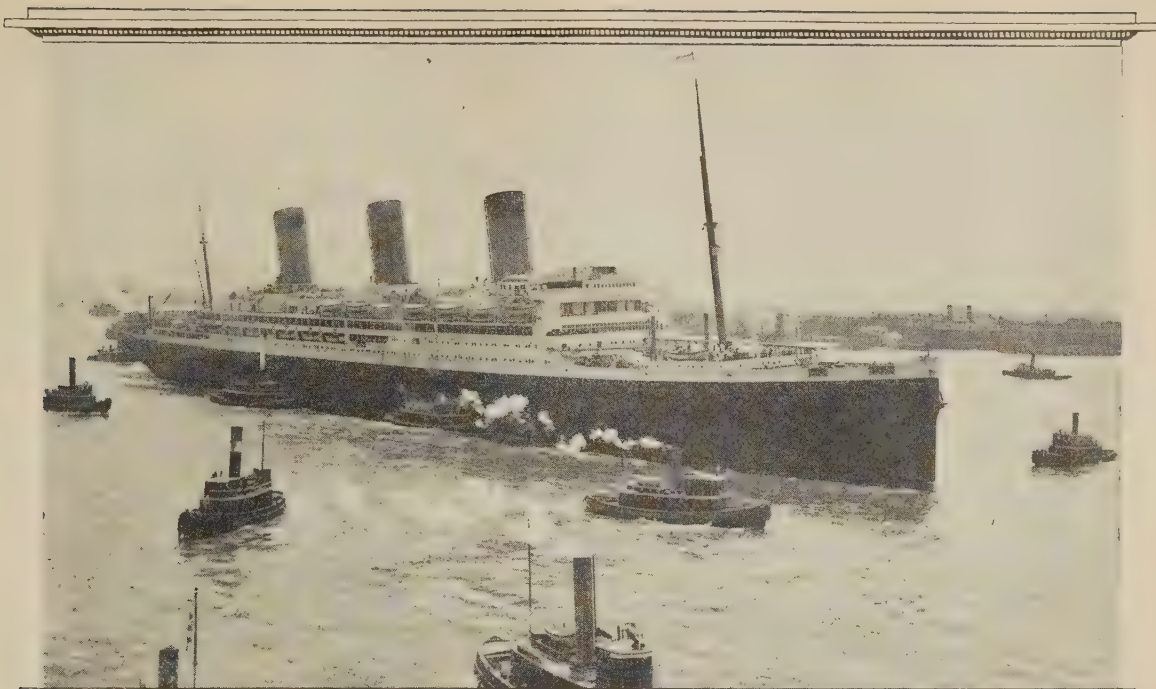
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Fig. S. 1. A great ocean liner entering New York harbor. Trace its path on Fig. S. 5. What are all the little boats and what work do they do?

GEOGRAPHY OF NEW YORK STATE

HOW A GREAT HARBOR HELPED TO MAKE A GREAT CITY

S. 1. We live in the Empire State.—We are proud of the name of our state because the name *empire* suggests greatness. But is New York the largest state in the Union? No. There are twenty-eight states larger in area than ours, but it is the largest of the North Atlantic States. (Reference Table VII.) Is New York the largest in population? Yes. It leads all the states. More than ten million people live in our state, and of these ten million over five million live in New York City!

There must be good reasons why so many people choose to live in New York

State, and if you are a good New Yorker you will want to know what these reasons are. Perhaps the most interesting way to begin will be to ask yourself why your father lives in New York. Did he always live here; and if not, why did he come? You may have to go back to your grandfather to find out why your family is now living in the Empire State. No doubt the boys and girls of your class will have some interesting stories to tell about this problem. In the following pages several reasons are given to explain the large population of New York.

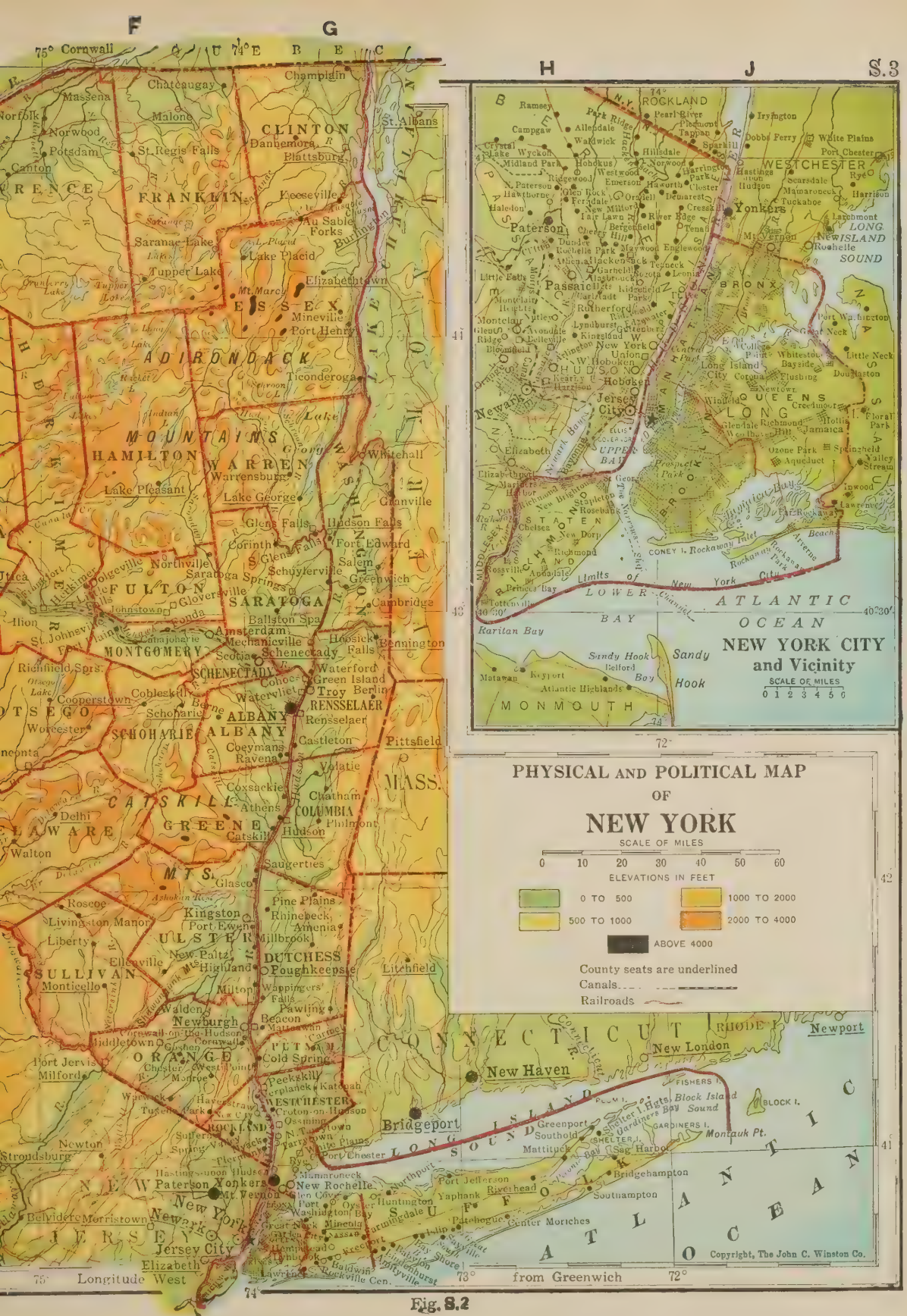




Fig. S. 3. The *Half-Moon* entering the Hudson.

Part of your study will be to find all the reasons.

S. 2. The important location of New York.—Notice on the map (Fig. S. 2) that two of the Great Lakes and the St. Lawrence River form part of the northern and western boundary of New York, and that long, narrow Lake Champlain lies on the east between New York and Vermont. Most important of all, however, is the fact that the southern part of the state pushes itself down to the ocean like a wedge between the New England States and the other Middle Atlantic States. This strip of seacoast between Connecticut and New Jersey is very important to New York, for on the narrow part of the wedge is New York City, the largest city in the United States.

S. 3. A young city.—In 1903 New York City celebrated the 250th anniversary of its existence. In the year 1923 the city was therefore 270 years old. This may seem a long time to you, but the Pyramids of Egypt were built about 5000 years ago, and Rome has just celebrated its 2676th birthday. You see that three hundred years do not count for very much after all. What has happened in this short period, however, is truly astonishing! Out of a wilderness inhabited only by a few thousand Indians when Henry Hudson entered the Hudson River in the *Half-Moon* in 1609, there has grown this wealthy, populous state. Within its borders is a great world city, a city rivaled only by London, which took centuries and centuries to reach its present size and importance.

S. 4. Ships and people come to New York City.—What draws people to New York City? Most of them come because there is work of one kind and another for everybody. Read Sec. 199 to gain an idea of what a great many people in this huge city are doing. All the occupations mentioned in Sec. 199 have to do with *trade*. Because of its large and well-protected harbor, New York can trade with countries across the ocean and with the south, west, and east coasts of our own continent. This is one reason why the state has grown so large. The map (Fig. 213) shows how the trade routes which center at New York spread out over the world like a vast spider's web. Ships from all the seas come into New York laden with the treasures of the earth. The map of the harbor (Fig. 211) shows you why the harbor is called a *gateway*. There is a wide gate at the entrance and a narrow gate farther in.

Both of these protect the harbor from fierce ocean storms. Below the map you are told for what special persons such a map is made. Why is a pilot necessary? What is a buoy and how does it mark the channel? Fig. 32 shows a ship steering its course by the help of two buoys. How are these marked at night?

S. 5. Entering the harbor.—If you sail into the Lower Bay, you will pass on your left the long, sandy peninsula called Sandy Hook (Fig. 211). You will be interested in the lightship (Fig. 210) and lighthouses which mark the entrance to the bay. Your ship enters Ambrose Channel. Look on the map for the buoys on each side of the channel. Perhaps you will be so fortunate as to see a dredge at work digging up the mud to keep the channel deep enough for the largest ocean ships. Soon you enter "The Narrows", with the soft green of Long Island and Staten Island on each side. Now you are in the Upper Bay. Straight ahead towers the Statue of Liberty holding her torch aloft. Beyond her your eager eyes gaze astonished at the high, massive buildings of the lower part of Manhattan Island. Your boat turns into the dock, ties up at the pier, and begins to unload. (Fig. S. 52.)

In Fig. 207 you see two ships unloading. Alongside are the barges and canal boats to transfer the cargoes to factories near by, or to railroad terminals where they will be put on freight cars and sent to distant corners of our land. Read Sec. 251 to see how a sugar ship from Cuba enters the harbor. Why do pilots come to New York to live? Who work the dredges that keep the channels clear of mud? Who carry the bags of sugar from the ships' holds into the refineries



Fig. S. 4. Statue of Liberty in the Upper Bay. What does this statue say to the immigrants who enter the harbor?

in Brooklyn? Who load the refined sugar on the barges to take it to the railroads? Are you not beginning to see that there is much work to do around the harbor of New York, and that the men who do the loading and unloading, who work in the factories and offices, must all live near their work?

S. 6. Wonderful buildings.—A visitor who enters New York harbor for the first time and approaches the city is full of wonder at its strange beauty. It is like no other city in the world. On a clear day the waters sparkle, and the sun gilds the tops of the tall buildings which crowd the water's edge (Fig. 206). Among the many towering structures the Woolworth Building rises fifty-five stories into the

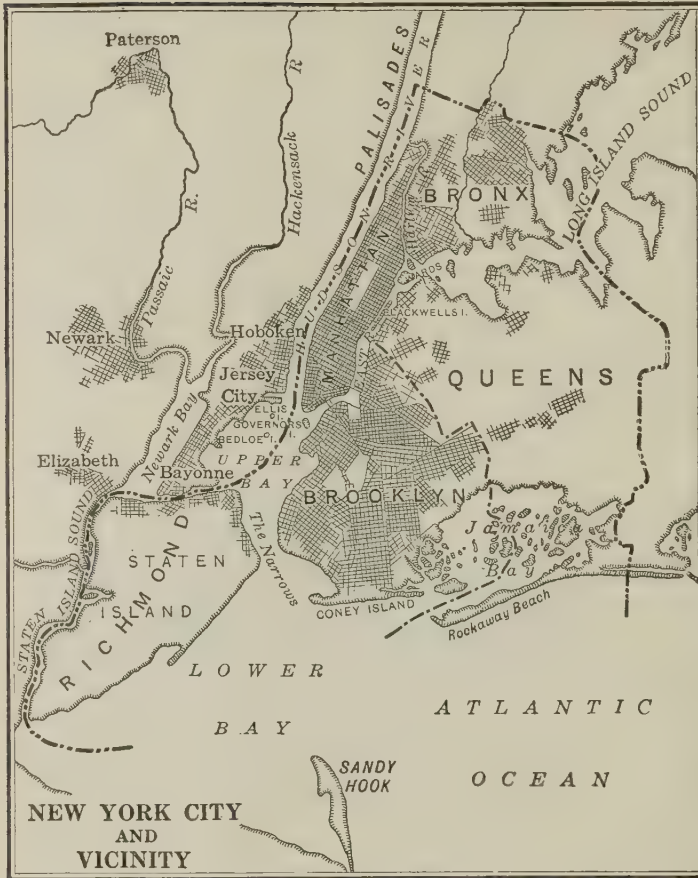


Fig. S. 5. The harbor and city of New York. Name the bodies of water which help make the harbor; the boroughs of the city; five neighboring cities.

air, a miracle in steel and stone. To the right of the newcomer is the East River, an arm of the sea connecting New York Bay with Long Island Sound (Fig. S. 5). This protected waterway gives to smaller vessels which run to the New England coast a shorter and a safer inland passage from New York Bay. Suspended in mid-air across the East River is the Brooklyn Bridge. Beyond it are other bridges over which the people of Brooklyn and other Long Island towns pass in electric cars and automobiles from their homes to the center of business on Manhattan Island, and back again.

S. 7. The Port of New York.

—The harbor of New York is one of the most wonderful in the world. Look at the many arms of the sea which push far up into the land, allowing the largest ships to come to the very doors of the city. Find on the map (Fig. S. 5) the larger bodies of water, the Lower Bay and the Upper Bay with “The Narrows” between, the Hudson River, the East River and Long Island Sound, and Newark Bay. The smaller channels are the Harlem River between the boroughs of Manhattan and the Bronx, and the narrow waterways north and west of Staten Island. This waterfront of 771 miles makes what is called the “Port of New York”, though its shores are not all within the limits of the city. It takes in Jersey City and Hoboken on the opposite side of the Hudson, and

Newark at the mouth of the Passaic River, all in the state of New Jersey. Because of this location they share in the commerce of the port and act with New York in keeping the waters clean, in building docks, and in all other matters dealing with commerce. The creation of the Port of New York, and the making of agreements between New York and New Jersey, show how sensible it is when people are interested in the same thing for them to act together for the common good. The port district extends as far north up the Hudson as Tarrytown, east to Port Chester, and west in New Jersey

as far as Passaic and Montclair.

It is said that an ocean-going steamer goes in and one goes out of the harbor every twenty minutes of daylight every day in the year. To store the cargoes which these ships bring in and carry away, immense warehouses have been built along the waterfront (Fig. 206). It would tax your knowledge to make even a partial list of what these ships transport. The goods cannot be stored a long time, because space is limited. As soon as a ship is tied up at her dock, notice is sent to those

who have ordered the goods. Telephone and telegraph lines are thus kept busy. Perhaps another ship is steaming in and her cargoes must be handled and loaded upon motor truck, boat, or train. The streets leading to the docks are crowded with loaded trucks and wagons. Passengers have landed and must get themselves and their baggage to their homes. It is all the traffic policemen can do to keep people from being hurt or run over as they cross these busy streets.

PROJECTS

Project 1.—To gain an idea of the size of your state.

Have you ever walked a mile? How far is school from your home? A square mile is a piece of land each side of which is a mile in length. If you live in a city, find out

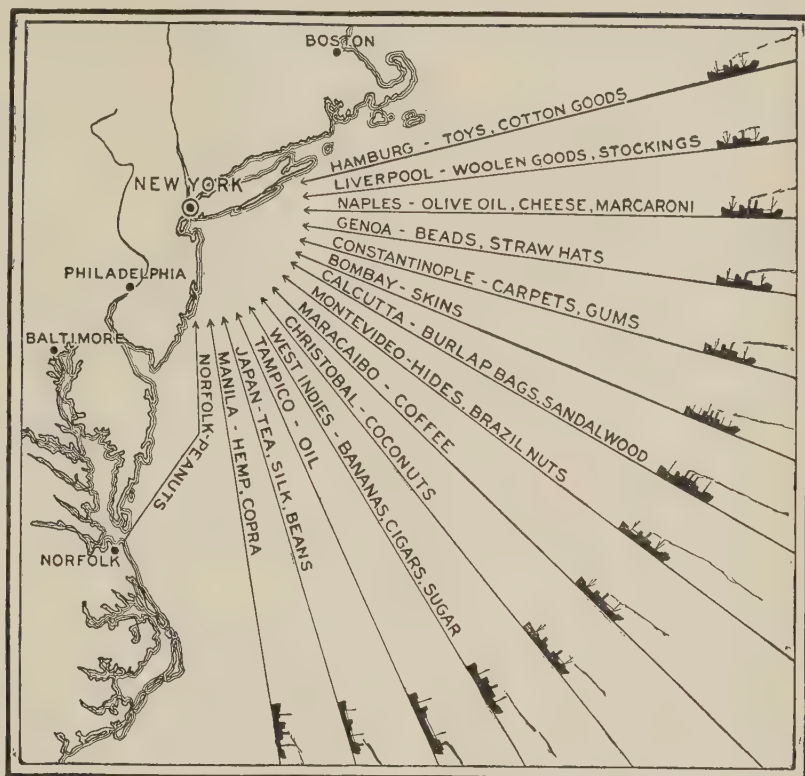


Fig. S. 6. This map shows some of the steamships with their cargoes and ports of origin which entered New York harbor during one week in July.

how many blocks in a square mile. If you live on a farm, you know how many acres there are in your land. Ask some one what part of a square mile this is. Reference Table VII gives the number of square miles in New York, and your teacher will help you to estimate how many farms like yours will equal New York in area.

Project 2.—To gain an idea of the size of your state by another method.

Another way to gain an idea of distance is to see how long it takes to travel across it. From Albany to Buffalo is about 250 miles. One of the fast passenger trains, the Empire State Express, leaves Albany at 11.32 A.M., and arrives at Buffalo at 5.30 P.M. How many hours and minutes does the journey take? How long would it take to ride that distance in an automobile going 25 miles an hour? to walk it going 20 miles a day?

Project 3.—To make a pattern of New York State.

Lay a piece of thin paper on the map of New York (Fig. S. 11). Trace the boundaries carefully. Cut out along this tracing line.

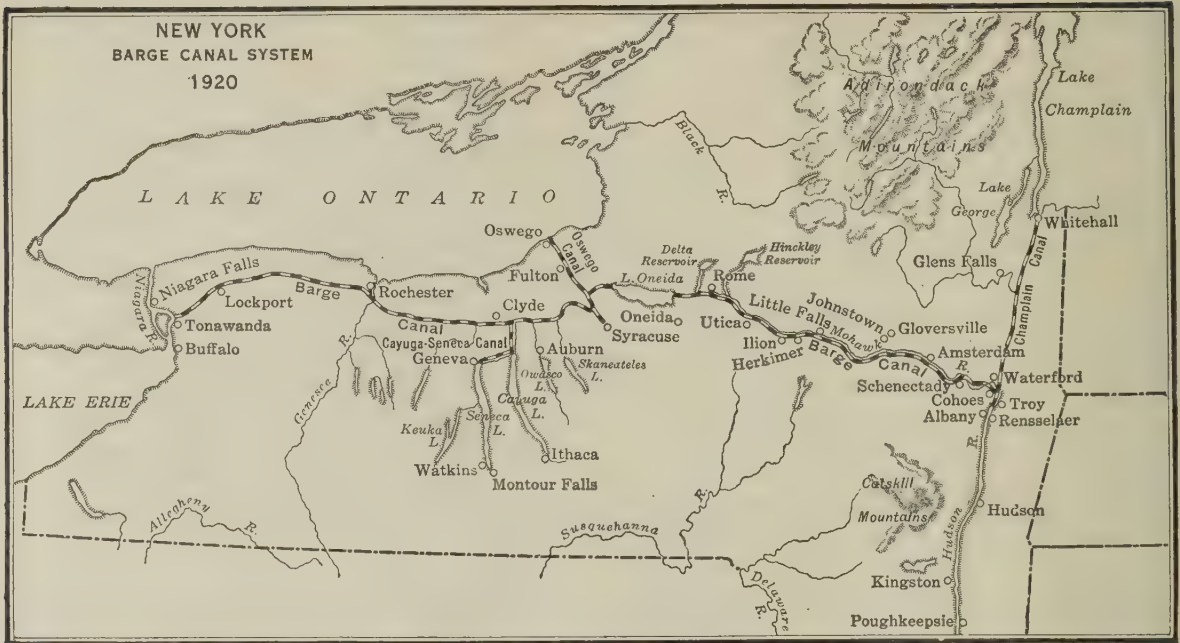


Fig. S. 7. The New York State Barge Canal and the chief cities along its course. How is Lake Champlain joined to the Barge Canal? lakes Seneca and Cayuga? Oswego? What natural waterway connects New York City with the Canal?

Place this outline on heavier paper or thin cardboard and draw the outline. Cut this out. You have now a pattern which can be used to make outline maps of your state, on which you can place important features as you learn them.

Project 4.—To draw a map of New York State emphasizing its boundaries. Use the pattern just made and draw an outline map of New York. Write the names of the land and water boundaries in their proper places. Complete the northern boundaries of Lake Erie and Lake Ontario. (Fig. 64.)

DIRECTIONS FOR FURTHER STUDY

If Henry Hudson could see the steamship in Fig. S. 1, what things about it would astonish him most? Why is it that some harbors which a hundred years ago could accommodate ships of all sizes are not now doing much trade? If you have never seen a lightship or a lighthouse, ask questions about them of your classmates who have seen them. Try to find out something about the lonely life of a lighthouse keeper. A lighthouse is easy to draw. Perhaps you can draw on the black-board a picture of the Sandy Hook light.

Are there lighthouses on Lake Erie and Lake Ontario? on Lake Champlain? Is electricity or kerosene oil used for the lights?

HOW A GREAT TRADE ROUTE HELPED TO MAKE NEW YORK THE SEA GATE OF THE CONTINENT

S. 8. A famous inland waterway.—Large and deep as is the harbor of New York City, it is not that alone which has led to the rapid growth of the city. In the early days of our country Philadelphia was larger than New York. After the Erie Canal was built in 1825, however, New York began its career as the gateway of the continent. In Secs. 200 and 201 you will read how the settling of the Central States and the building of the Erie Canal brought the food products of the West to New York where they were shipped to Europe. With the money obtained from the sale of their produce the farmers of the Central States bought from the merchants of New York goods imported from Europe.



Fig. S. 8. The great Iroquois Trail ran from the Hudson River near Albany westwardly to the Niagara River. Find this trail on the map. Note how closely the Barge Canal follows its course (Fig. S. 7); the Albany-Buffalo Highway. (Fig. S. 11.)

S. 9. The Erie Canal and New York's growth.—These goods and farm products could be carried cheaply by water through the Hudson River, the Erie Canal, and the Great Lakes. There then began an era of business due to the inland water transportation which brought large numbers of people to the state. Farms and villages grew up along the canal route at favorable points, and it was not long before New York City grew larger than its rivals, Philadelphia, Baltimore, and Boston. That this growth was due to the geography of the state will be very plain to you after you have looked carefully at the map of the Middle Atlantic States (Fig. 198). Much of the history of a country depends upon the arrangement of its highlands and lowlands, its rivers and its coast lines. A thoughtful map study will prove to you that the geography of New York State has had everything to

do with its development. The low Mohawk Valley between the Adirondack Mountains and the Allegheny Plateau to the south, and the nearly level plain south of Lake Ontario made it easy to dig the canal from the Hudson to the Niagara River. Try to get a vivid picture of this valley in your mind. Compare the map with the picture shown in Fig. S. 33. What color is used on the map to show both valley and plain? What colors represent the highlands on each side?

Now find Philadelphia and Washington on the map (Fig. 198) and note some of the difficulties that stood in the way of their citizens going to Pittsburgh and the West. In the western part of Pennsylvania is a highland over 2000 feet high. To carry passengers and freight over so high a barrier, even though the river valleys were followed as much as possible, was very costly. The Mohawk-

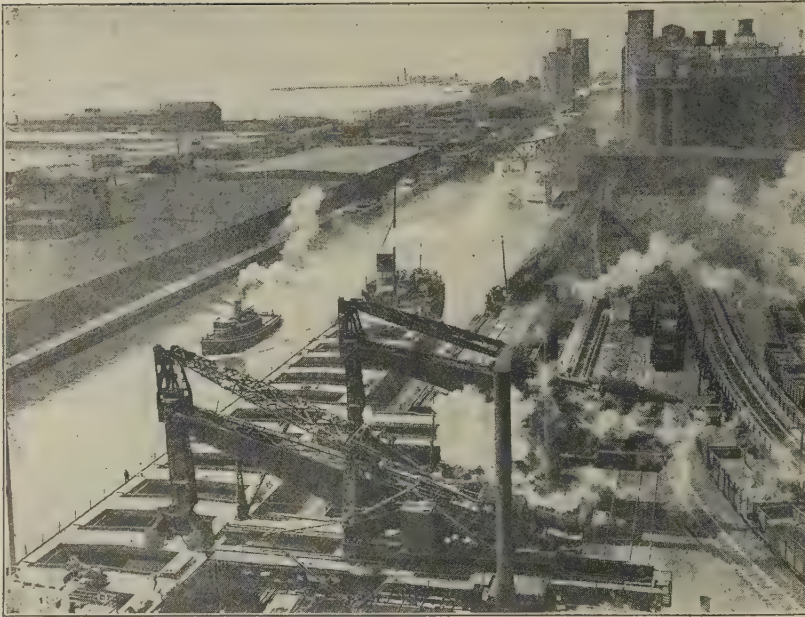


Fig. S. 9. An ore ship from Minnesota is being emptied at Buffalo by the means of great cranes. Notice the grain elevators and the railroads. Buffalo is at the western end of the great Barge Canal trade route.

© Ewing Galloway, N. Y.

Hudson route, however, had only 420 odd feet to climb, and could offer cheaper rates. As a result it quickly became the popular route to the West. The fortunes of New York were made. To-day out from the port of New York City goes more than one-third of all the goods that the United States sends abroad, and into New York comes nearly two-thirds of all the goods brought in from countries across the Atlantic. The sea gate at the mouth of the Hudson has become the sea gate of a vast continent.

S. 10. A trail the Indians made.—Long before white men used this easy road, the Iroquois Indians of the "Six Nations" had made a well-worn trail from the Hudson to the Niagara River (Fig. S. 8). How closely the present route of the canal follows the old Indian Trail! The Mohawks, Oneidas, Onondagas, Cayugas, Senecas, and Tuscaroras were

the leading tribes of this league. To and fro through the dark forest by the shores of river and lake the swift Indian runners sped, carrying their messages between the Mohawks on the east and the Senecas who guarded the western door of the "Long House", as the villages of these tribes were called. What a change has come over this valley! The forests are gone. Beautiful farms are there, and populous towns have sprung up. The trail is no more. Even the old Erie Canal

has been deepened and widened and in some places entirely remade into the State Barge Canal (Fig. S. 7). Parallel to it thunders "The Twentieth Century Limited", as well as freight and other passenger trains of the New York Central Railroad, linking the far distant parts of our country with the sea gate at New York City. In the Mohawk Valley you can see the river, the canal, and the railroad side by side. This must make the importance of the lowland very clear to you. But the past is not forgotten in the valley. You will find reminders of it in the Indian names which dot this famous line of transportation. Which names on the map of the Iroquois Trail can you find on the map of New York State (Fig. S. 7)? Perhaps you know other Indian names which are not on this map. Some of our states have Indian names. Mississippi is one. Try to find others.

PROJECTS

Project 1.—Copy all the Indian names on the map of the Iroquois Trail (Fig. S. 8), and tell what each is the name of: as, lake, county, or river.

Project 2.—Find other Indian names on the map of New York State, Fig. S. 2.

Project 3.—Write a short story of the Mohawk Valley from the days of the trails to the canal and railroads of to-day.

DIRECTIONS FOR FURTHER STUDY

One of the best ways to study is to ask questions about what you are reading. What questions are suggested to you about what you have read in this chapter? See how many of these questions your classmates can answer.

The pictures and maps are here for you to study carefully. What questions can you ask about any of them?

GOOD TRANSPORTATION HELPS MANUFACTURING

S. 11. Trade brings people.—As soon as the Erie Canal was built, settlers flocked to the valleys and plains along its route. Farmers came to till the rich soil and to raise crops to sell because there was such a cheap way of getting them to a market. Wherever rivers like the Hudson, the Mohawk, and the Genesee tumbled over falls, a water wheel was set up (see Fig. 231), and a grist-mill or a sawmill was built. Grain was ground into flour, or logs from nearby forests were sawed into lumber. Then, because machinery was needed for mills, and tools and implements for the farmer, people began to build factories,



Courtesy N. Y. C. R. R.

Fig. S. 10. "The Twentieth Century Limited," the fastest train between New York and Chicago.

and men came to work in them. Villages grew into towns and towns into cities. To-day, instead of the Iroquois villages of 1750, there is a chain of busy manufacturing cities all the way from New York City to Buffalo, as well as at favorable points on the Allegheny Plateau, and on the Adirondack slopes.

S. 12. Why manufacturing grew.—There are four big reasons why manufacturing became the most important industry of the Mohawk-Hudson route: (1) There was abundant water power to set wheels in motion. (2) Raw materials began to come in increasing quantities from the Central States. (3) The canal made it possible to distribute these cheaply. (4) There was a growing population which had to be housed, clothed, and fed.

S. 13. An era of railroad building.—Carrying goods by canal boat is sure but slow, and this new country which was

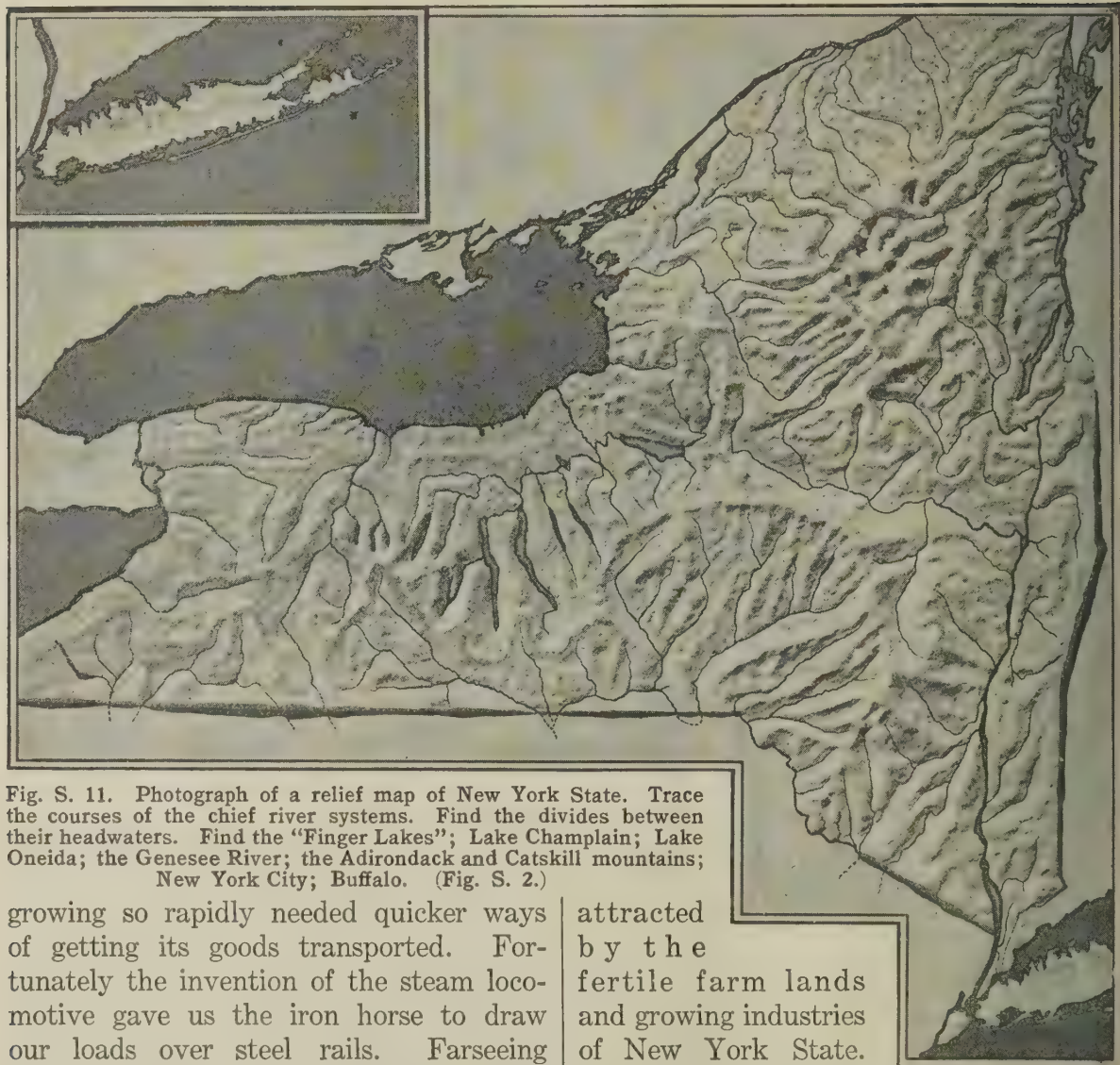


Fig. S. 11. Photograph of a relief map of New York State. Trace the courses of the chief river systems. Find the divides between their headwaters. Find the "Finger Lakes"; Lake Champlain; Lake Oneida; the Genesee River; the Adirondack and Catskill mountains; New York City; Buffalo. (Fig. S. 2.)

growing so rapidly needed quicker ways of getting its goods transported. Fortunately the invention of the steam locomotive gave us the iron horse to draw our loads over steel rails. Farseeing men began to build railroads. They realized that to improve transportation was the best way to develop the state and the country. In 1830 there were only thirty-four miles of railroad in the United States. By 1860 there were thirty thousand miles. By this time, too, the fame of the rich soil of the Central States had spread far and wide in Europe. Thousands of immigrants left their homes there to come to America, the land of opportunity. Many were

attracted by the fertile farm lands and growing industries of New York State.

The building of railroads gave a great impulse to manufacturing in the state. The railroads brought coal from Pittsburgh to Buffalo for use and distribution. To-day, along the Hudson and the Barge Canal, a four-track road runs from New York City to Buffalo. Three other great railroads connect the two cities, two of them passing through the hard coal region of Pennsylvania. (See Appendix, Table 2.) These railroads and the canal

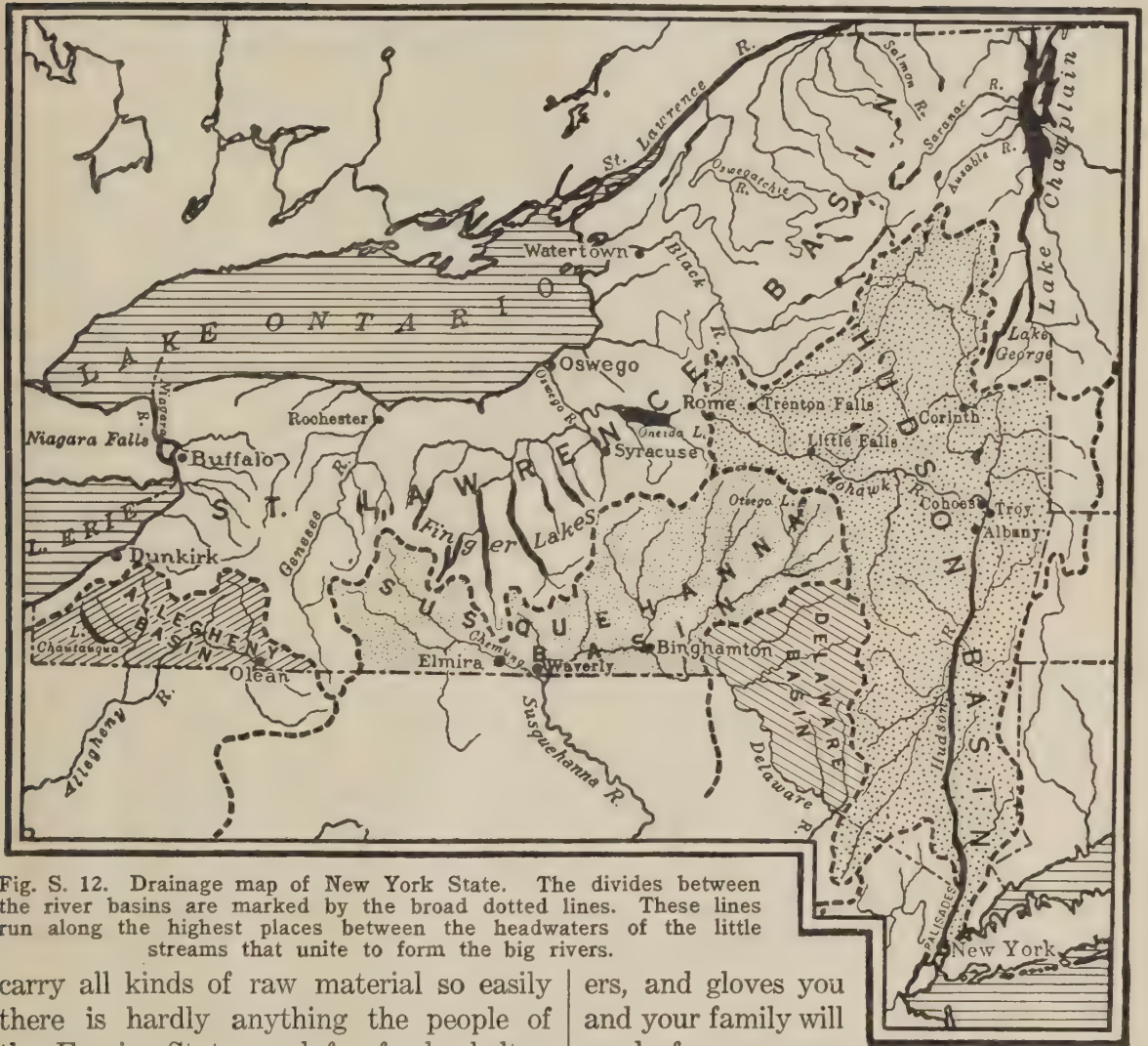


Fig. S. 12. Drainage map of New York State. The divides between the river basins are marked by the broad dotted lines. These lines run along the highest places between the headwaters of the little streams that unite to form the big rivers.

carry all kinds of raw material so easily there is hardly anything the people of the Empire State need for food, shelter, or clothing that is not made somewhere along this magnificent highway.

S. 14. New York State industries supply all our needs.—Do you want bricks to build your house? You can buy them from the brickyards of the Hudson Valley. Lumber for your floors and doors as well as your furniture can be ordered from Buffalo. Your carpets and the brooms to sweep them with are made in Amsterdam. In Gloversville, Little Falls, and in neighboring towns you can buy all the knitted underwear, sweat-

ers, and gloves you and your family will need for many a

long day. Should your father need a new plow or an automobile, he can order either one from Syracuse. If he wishes a typewriter, he can write to Ilion for it. Flour and cornstarch will be sent to you from Oswego and loaf sugar from Yonkers. Your camera is being made for you at Rochester; and to Rochester you may write for your flower and vegetable seeds and trees and shrubs for your garden. At any one of the many creameries that dot the fertile Mohawk Valley and the hilly country

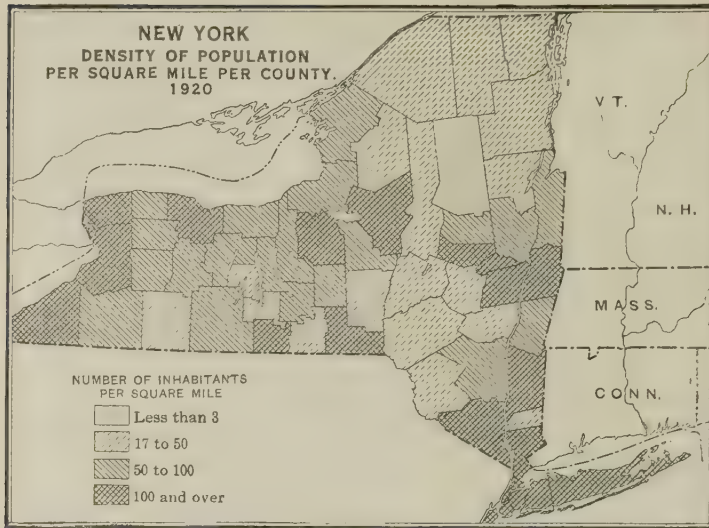


Fig. S. 13. What is the density of population in the county in which you live? Why does Hamilton County have so few people? Note the density of population along the Mohawk-Hudson route.

to the north and south, you can order your butter, cheese, and condensed milk. In the fall you will have the delicious New York grapes on your table; and the peaches, pears, and berries you eat or preserve may come from the splendid orchards south of Lake Ontario (Fig. S. 28). You may find it hard to buy the famous apples of the Hudson Valley and Finger Lakes, for many of these orchards send their entire product to England. Perhaps, however, you have apple trees of your own, for apples grow nearly everywhere in the state. It may be that the locomotive that brought these necessities to you was made in Schenectady. More than likely the head of some store in your home town sends to New York City once or twice a year for ready-made clothing for you and your brothers and sisters. Perhaps your teacher will appoint a committee to find out what goods your grocery or department store buys from New York. The length of the list may surprise you.

CITIES ALONG THE MOHAWK-HUDSON ROUTE

S. 15. Buffalo.—Though all the cities, big and little, on this waterway have good locations for trade and manufacturing, some have certain advantages which account for their superior size and importance. Let us begin with Buffalo. As New York City is a gateway to the sea, so is Buffalo the open door to the enormous traffic of the Great Lakes, the great navigable waterway extending so far into the interior of North America. If you

should visit the lake front of Buffalo, you might easily imagine you were at a great ocean port. Immense elevators store grain from the harvests of the prairies. Steel boats bring iron ore from the mines of Minnesota. Great coal bins called "pockets" are here for the storage of coal. Everything necessary for manufacturing seems to be here,



Courtesy Onondaga Coarse Salt Assn.

Fig. S. 14. A salt works near Syracuse. The fine crystals of salt have been shoveled into huge buckets. The men are emptying the buckets into a large car which the horses will pull away over the rails.

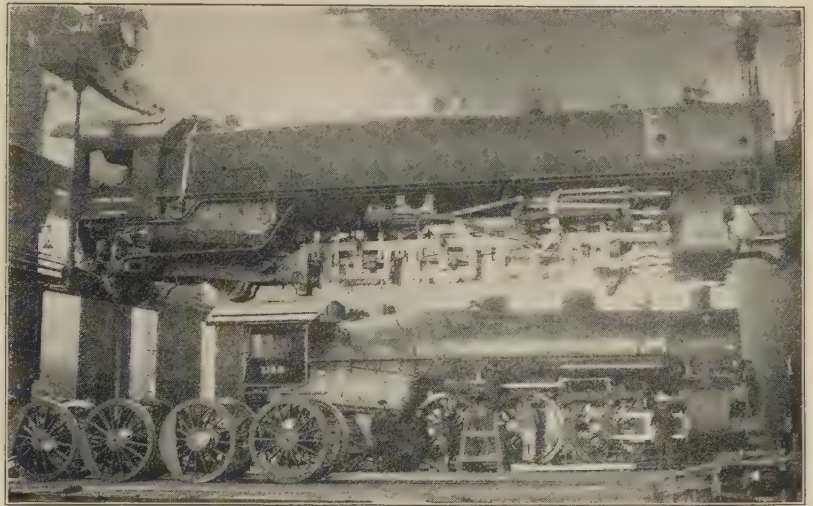
for besides coal for heating and lighting there is natural gas piped to Buffalo from Pennsylvania and Canada.

Besides all this, Buffalo has another great resource. It has cheap power for factories. The great force of the water coming over Niagara Falls (Fig. 214) runs dynamos by means of which electricity is made. This electric current is carried by wires to cities as far away as Syracuse. There

seems to be no end to the things made there. Buffalo is also a great distributing center. Give two reasons why you are not surprised to find it is the second city in size in the state.

S. 16. Rochester.—The pretty picture of the Genesee Falls (Fig. 218) shows you why the settlement which later became Rochester grew up at that point. The falling water could turn mill wheels, and grain was easy to get from the West by canal. Other industries are now more important than that of flour, but it is still called the "Flour City" as well as the "Flower City". The large nurseries around Rochester give it the appearance of a city set in a garden. The city is near enough Lake Ontario to have a good deal of lake traffic through its port on Lake Ontario.

S. 17. Syracuse.—The presence of salt springs near Syracuse caused salt making to be one of the early industries of that city. To-day, salt manufacture is less important, but the industry of making soda by the Solvay process near Syracuse



Courtesy American Locomotive Co., Schenectady

Fig. S. 15. Building locomotives at Schenectady. The big, heavy locomotives are lifted by huge cranes as easily as you would lift a toy, and are carried to any part of the works.

is very important. Syracuse has other advantages of location, being on the Barge Canal at the point where a branch canal runs to Oswego on Lake Ontario. Two main railroads also cross here. One runs east and west across New York State with a branch line to the north. The other runs south to Binghamton (Fig. 212). Thus Syracuse is a transportation center—a junction where people change cars and where freight is transferred. There is much manufacturing and business done here. Where does the power for the factories come from?

S. 18. Rome and Utica are on the railroad and canal and in the center of a fertile farming district. They are large markets for farm products. Big canneries for fruits and vegetables have grown up here.

S. 19. Amsterdam, Gloversville, and Little Falls are, as you have learned (Sec. S. 14), industrial towns. The Appendix will show you the number of useful things made in Amsterdam. Can



Photo. Brown Bros., N. Y.

Fig. S. 16. The capitol of New York State at Albany. The State Senate and Assembly meet in this building to make the laws for our state. Find out how often they regularly come together.

you find out how this town received its name?

S. 20. Schenectady.—Besides making locomotives, Schenectady turns out more electrical machinery than any place in the world. Here are made electric motors for trolley cars and soda-water mixers, electric fans to cool us, and electric heaters to warm us. Thousands of workmen are employed. They must be very skilful to make the fine tools and apparatus needed for radio, telephones, and all kinds of electrical machines.

S. 21. The Capital.—From the days when the Dutch founded Fort Orange on the present site of Albany, the location has always been important. The fort was placed there because it was the end of deep-water navigation up the Hudson, and because there were natural highways which met there.

Let us examine these natural roads on the map (Fig. S. 2). First there is the Hudson Valley along which one travels easily north or south. From the west comes the Mohawk River joining the Hudson just north of Albany. You have already learned what a highway of trade



Photo. Brown Bros., N. Y.

Fig. S. 17. The New York State Educational Building at Albany. Many of the men and women who direct the great public school system of our state have their offices in this building.

and travel this valley is (Sec. S. 11). Now find the big bend of the Hudson north of Albany. Between this bend and Lake Champlain you see that the land is low. There are no mountains or steep hills to cross. Once on the lake it is easy going. Find the little river to the north which carries the waters of the lake to the St. Lawrence River. (Fig. 228.) Such a river is called an *outlet*. The lake and the lowlands to the north and south give an easy pathway from the St. Lawrence to the Hudson. To-day a railroad carries travelers and freight along these valleys from Albany to Montreal. On the map (Fig. S. 7) you will find there is also a canal connecting the Hudson with Lake Champlain. But in the early days there were only the forest and the well-trodden Indian trail.

Unless you know a good deal about United States history, you can have no idea how the early settlers in this valley and around Schenectady suffered from Indian massacres and wars. The French, with the help of the Indians, tried desperately to keep possession of this natural road from Canada to the Hudson,

but they were defeated by the English at the cost of hundreds of lives. This important valley as well as that of the Mohawk-Hudson are good examples of what was told you in Sec. S. 9, that the geography of a country has much to do with its history. As you study history and geography, be on the lookout for other examples of this kind.



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Fig. S. 18. The Highlands of the Hudson near West Point.

Because Albany lies at the crossing of these natural roadways, it has been a famous meeting place. In colonial days Indians and English gathered there in great councils. In the big railroad station crowds are always waiting to make some connection, either west to Buffalo, north to Montreal, south to New York, or east to New England. To-day it is the capital of the state, the meeting place of our representatives who come there to make good laws for the whole state. The beautiful Capitol Building where the Senate, the Assembly, and the Court of Appeals meet is situated on a hill which gives an extensive view of the surrounding country. The people of Albany have done much to make their city beautiful with parks and boulevards. Near the Capitol is the State Education Building. A large staff of men and women are working here to give the young people of the state the best possible education. Here also is the State Health Department studying to prevent disease, and to make the people of the Empire State strong and well.

S. 22. Down the Hudson by boat.—

Between Albany and New York City the New York Central Lines run along both sides of the Hudson, but the traveler who wishes to see the full beauty of the river must take the day boat. (Fig. S. 18.) These boats are large enough for hundreds of people to sit upon the deck and enjoy the "sights" for which our Hudson is famous. Let us take the big boat, the *Hendrick Hudson*, and go down the river to New York.

Soon after we leave Albany, we pass through a lovely farming country. We see orchards with rows of apple and peach trees, and herds of cows at pasture. Up on the hills which border the river are beautiful estates. The Catskill Mountains come into view on our right, and we think of the lonely glen where Rip Van Winkle slept away his twenty years. In these mountains are no sharp peaks piercing the sky—only softly rounded outlines green to their tops, with now and then the shining front of a summer hotel far up on the sides. At Poughkeepsie, where young women from all over the country go to Vassar College to be educated, we pass under a great

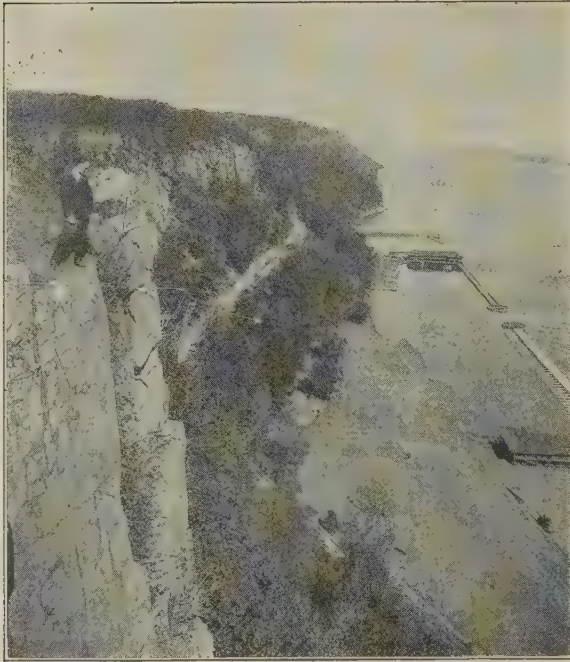


Photo. Brown Bros., N. Y.

Fig. S. 19. A winding road up the Palisades from Dyckman Ferry to Bear Mountain.

bridge, the first one below Albany to be built across the Hudson. We hear the rumbling of the freight cars as they carry coal by a short route from Pennsylvania to Massachusetts. We pass Newburgh, where Washington had his winter quarters during the Revolution. The shores grow lower. Here millions of bricks have been made from the great beds of clay. Then the boat enters the renowned Gorge of the Hudson. It is a solemn and grand spot, with the shores rising into cliffs a thousand feet high. There is West Point, the United States Military Academy, on a great bend of the river. This is a most noble location for the school where our army officers are trained. Farther down, Yonkers, a rapidly growing manufacturing city with many country-like homes, comes into view. As we approach New York City itself, the Jersey side of the

river rises straight up into a high cliff, an unbroken wall called "The Palisades". (Fig. S. 19.) We see on this bank some manufacturing plants and some amusement places. On the New York side, we see the rows of apartment houses, Grant's Tomb, Riverside Drive, and the many towers and high city buildings (Fig. S. 52). Then the *Hendrick Hudson* finds its pier among all the others, and we begin our sight-seeing of New York City.

PROJECTS

Project 1.—Use your pattern of New York and draw an outline map of the state. On this draw the Barge Canal and the Hudson River. Locate on this transportation line Buffalo, Rochester, Syracuse, Albany, and New York City.

Project 2.—Read again the four reasons given (Sec. S. 12) for manufacturing being the chief industry of the Mohawk-Hudson route. Which of these reasons account for the industries of your home town? Learn these four reasons.

Project 3.—Make a good long list of the things you use every day about the house, and for your food and clothing. Examine the labels on the canned fruits and vegetables you use and consult the Appendix, Table 13, to find which articles are made in New York State.

DIRECTIONS FOR FURTHER STUDY AND FOR REVIEW

Do you burn soft or hard coal in your home? in the factories in your home town? Look up the word *coal* in the index of Book One. There you will find where there is a whole section and a map about coal in the United States. Read the section and study the map to find where soft and hard coal are found in our country. Trace the route on the Great Lakes of a boatload of iron ore from the mines in Minnesota to Buffalo (Figs. 112, 114, and 99). It carries back soft coal from Pittsburgh.

What are the industries of the place where you live? Why? How did your town get its name? Is it an Indian name? Name in order the chief cities one passes in going from New York to Buffalo along the New York Central Railroad. (See Figs. 212 and S. 2.)

THE VARIED SURFACE OF NEW YORK

S. 23. A beautiful land.

—You have now seen that New York leads in population because of its splendid opportunities for trade, manufacturing, and transportation. But there is another thing about our state of which we can be proud—its beauty. Every summer, automobiles carry people along the smooth, broad highways which cross the state from north to south and from east to west. All these people are going to some lovely spot to fish in the streams, to climb the mountains, to explore the forests, to camp by the lakes, or to bathe in the broad Atlantic which washes the southern shore of Long Island. Let us look at the surface of New York more carefully. It has no lofty mountains, no deep canyons, no giant trees, yet there is great charm in its wooded mountains, in its gorges and waterfalls, and in its rolling, cultivated fields in the broad valleys.

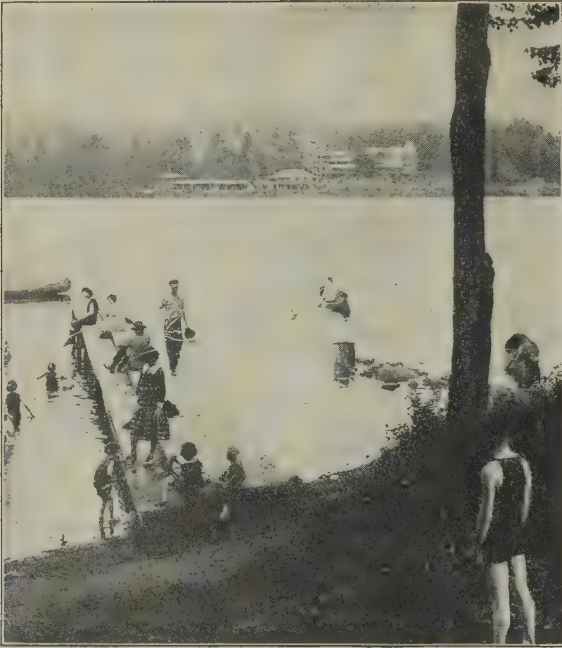
1. THE ADIRONDACK MOUNTAINS

S. 24. Some real mountains.—The physical map (Fig. S. 2) shows the most striking features on its surface, but you must be sure that you understand what all of the colors represent. On the left of the map is the explanation. There is only one place in the state where the land is over 5000 feet high—Mt. Marcy (5344 ft.), the highest mountain in the state and among the highest in the



Photo. Brown Bros., N. Y.
Fig. S. 20. Saranac Lake Village as seen from Mount Baker. What reason can you give for this region being so healthful?

Appalachian Mountains. From its summit one looks down on the lower peaks and ridges of the Adirondacks, nearly all of which are covered with forests. (Fig. S. 22.) Between the ridges flow mountain brooks. In the spring, when winter snows are melting under the April sun, the water foams and dashes along its bed, carrying with it pieces of the tops and sides of the mountains which have been loosened by the frosts of winter and the heat of summer. By the time these jagged fragments reach the lower valleys, their sharp edges have been worn off by continual rubbing, and we find smooth, rounded pebbles in the bed of the stream. These brooks are the home of the speckled trout, beloved of fishermen, and here in midsummer boys and girls play among the boulders in the shallows. In the deeper valleys



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Fig. S. 21. A swimming dock on Saranac Lake with St. Regis Mountain in the far distance. See if you can tell by the shadow of the pier at what time of day the picture was taken.

in the heart of the mountains are lakes surrounded by forests of spruce, fir, and hemlock. Saranac Lake is one of the most noted of these (Fig. S. 20). You can see the village between the lakes. Many sick people come to this dry, healthful climate to get well. The deep winter snows of the mountains also attract visitors (Fig. 219) who come for outdoor sports. Perhaps you have a book about Norway in the school library or at home and can find out from it what daring feats the Norwegians can perform with skis.

S. 25. Where many rivers rise.—You will notice on the map how the streams flow down on all sides to the lower lands below—very rapidly on the east to reach the still waters of Lake Champlain.

The lake looks very peaceful to-day. On its islands are fruitful apple orchards,

and around its shores both in New York and Vermont are pretty towns, summer homes, and camps. But in colonial days bloody battles were fought here between the English colonists and the French and Indians for the possession of this waterway (Sec. S. 21). The year 1609 was a memorable one in the history of our state, for in that year Henry Hudson sailed up the river to where Albany now stands, and the French explorer, Champlain, steered his boat from the St. Lawrence into the lake which now bears his name.

On the gentle southern slope of the Adirondacks rises the Hudson River. It begins at the foot of Mt. Marcy as a mountain brook, the outlet of Lake Tear-in-the-Clouds. Gradually, fed by other mountain streams, it grows broader and deeper on its way to the sea, until it becomes the great river. On this southern slope also rises the Mohawk, first tumbling, then flowing for the most part smoothly through its broad valley now so busy and populous.

Down the west, north, and east slopes



Photo. U. S. Forest Service

Fig. S. 22. Heart Pond and Mount McIntyre, Adirondack Mountains. The Hudson River begins in just such a little lake as this. Of what trees is this forest composed? (Fig. S. 24.)

of the Adirondacks flow many little rivers (Sec. 211). Into what bodies of water do they flow? All of them are swift and have numerous falls. Around the lower slopes of the Adirondacks the country is hilly. Some of it is forested. Among the hills are pretty lakes. At places where the falls in the streams are favorable for power plants, we find towns and cities making wood pulp and paper out of the spruce trees of the Adirondack and Canadian forests, or sawing logs into lumber. As we follow the northern and western streams far down their valleys, we come to a region of rich dairy farms, near Lake Ontario and the St. Lawrence River. (See Sec. S. 27.)

On the eastern side of the Adirondacks the streams are short and flow swiftly



Photo. Brown Bros., N. Y.

Fig. S. 23. Camping on Lake George. Tell about the duties and sports of camp life. Where is Lake George?

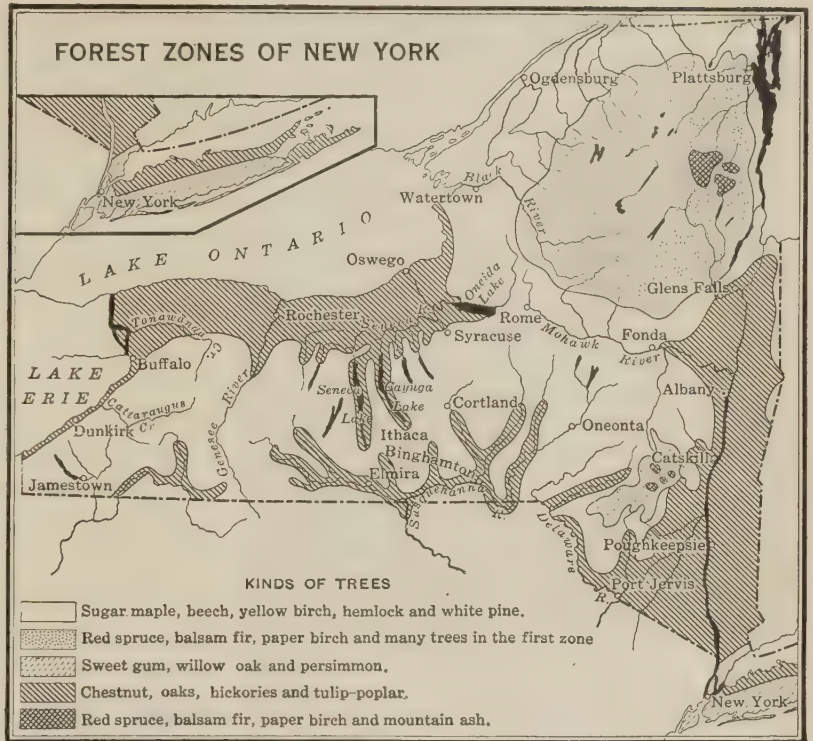


Fig. S. 24. The chief kinds of trees found in New York State are hemlock, maple, beech, birch, and spruce. If you live in the country find from the map the kinds of trees found near your home. Then see if you can recognize any of them on your way to school.

into Lake Champlain. There is no wide plain here. Wood pulp, lumber, and minerals are the chief products. The leading iron mines of New York are near Mineville. Find this place on the map. Near Ticonderoga are some graphite mines. Find out what you use graphite for mostly.

S. 26. Our state forests and parks.—The early settlers found New York covered with magnificent forests. There was every kind of tree they needed: white pine for building houses, barns, and ships; hemlock for tanning leather; hickory for ax handles; and maple, oak, and walnut for furniture. So they went to work with a will, clearing the land for farms, building rail fences, floating rafts of logs to the sawmills, and then

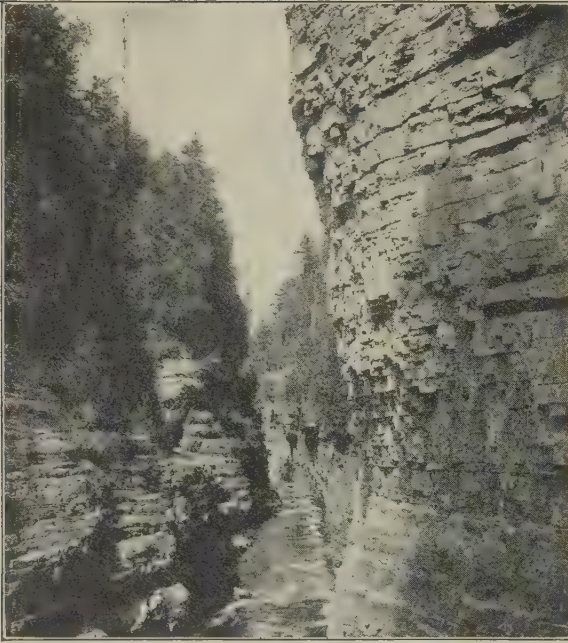


Photo. C. S. Hammond & Co., N. Y.

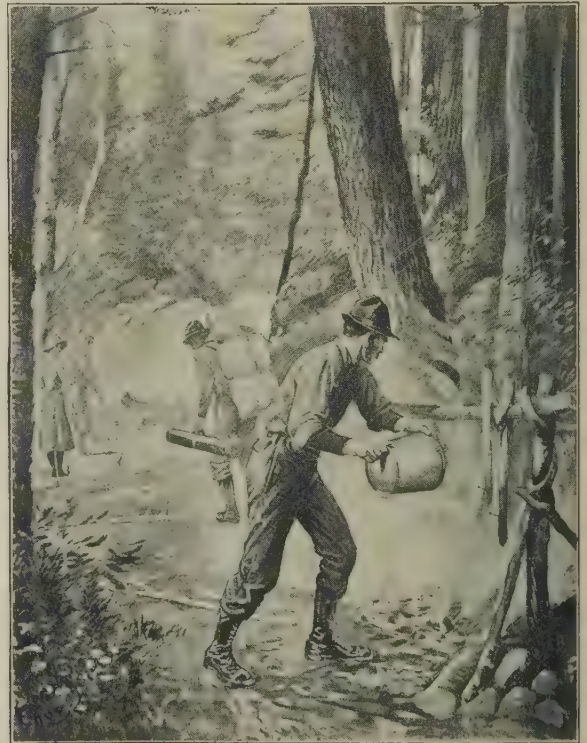
Fig. S. 25. Ausable Chasm in the Ausable River, near Keeseville, N. Y. Compare with Fig. 132 to see how running water and weather wear away the earth's surface.

floating the lumber farther down stream to the settlements. Albany was a famous lumber market because of the sawmills on the upper Hudson and on the Mohawk. To-day this trade is less important because the forests of the Empire State are practically gone.

About forty years ago the people of New York State began to realize that they were losing a very precious possession. A Conservation Commission was formed, and as a result of its work the state owns a large tract of land in the Adirondacks and a smaller one in the Catskills. These are called "forest preserves", that is, preserved for the people of New York for a future timber supply and for the protection of the head waters of streams. The forest preserves as well as the state parks have been thrown open to the public as recreation grounds.

Trails have been opened up and plainly marked, and camps and open fireplaces have been built. (Fig. S. 23.) In the Interstate Park, along the west bank of the Hudson near New York City, many thousands of acres belonging to New York and New Jersey have been provided with all kinds of conveniences for walkers and campers. The Commission also protects the wild game—deer, beaver, rabbit, squirrel, partridge, and trout. It looks after streams to see that the waters are kept pure and stocked with fish.

Its forest rangers are continually on the watch for fire, lest a tiny spark started by some careless hunter may be fanned by the wind into flames which may destroy thousands of trees besides much animal life. In addition, it is

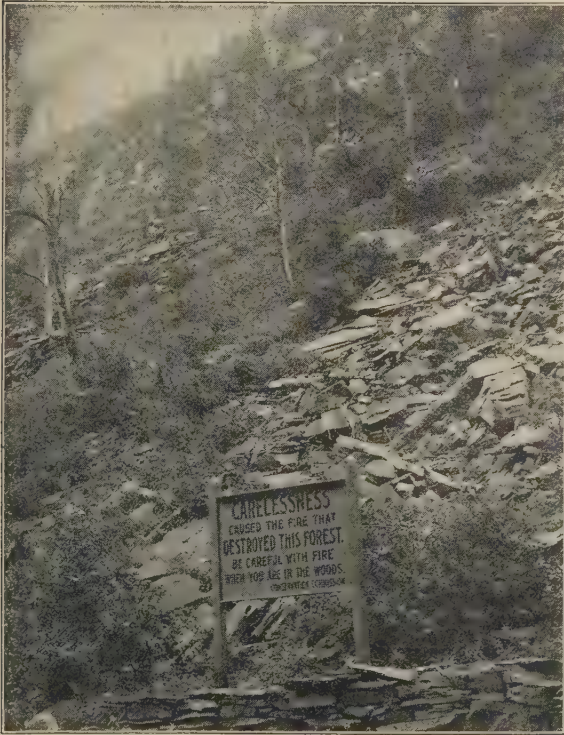


Courtesy Univ. State of N. Y.

Fig. S. 26. If campers in our forests would carefully put out their camp fires as this man is doing, many dangerous and costly forest fires would be prevented.

giving much effort to reforestation; that is, establishing nurseries where young trees are grown and cared for until they can be planted in the open. Its foresters also watch over these young trees after they are planted in the preserves.

The Commission issues bulletins to show people how to get these trees and to care for them. In one locality in the state some school children, under the direction of the Farm Bureau agent, planted ten thousand trees on the ten acres given them by the Commission. What a sensible thing for boys and girls to improve the resources of their state and to add to its beauty! Perhaps you could do something of the kind to improve your home town or your school district.



Courtesy Univ. State of N. Y.

Fig. S. 27. The trees on this hillside were killed by a forest fire. Then the heavy rains washed away the good soil and left the bare rocks exposed. What can boys and girls do to prevent the destruction of our forests by fire?

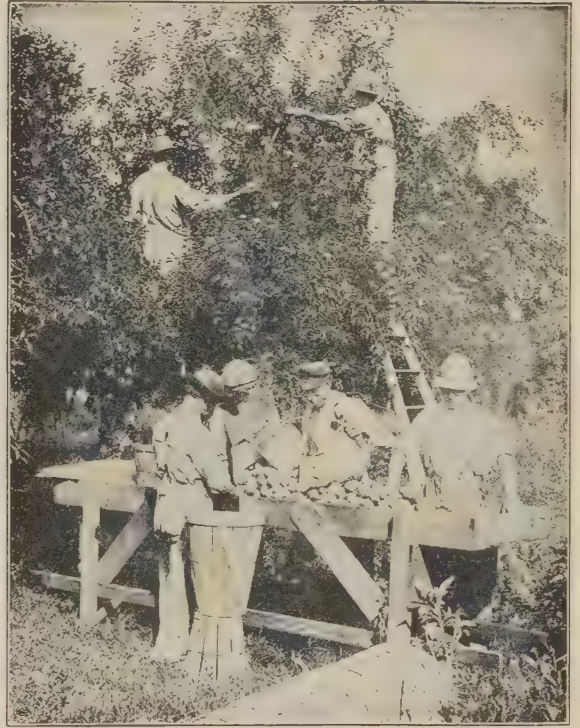


Photo. H. W. Porch

Fig. S. 28. Picking and sorting pears in New York State.

PROJECTS

Project 1.—Collect pictures of deer, beaver, squirrel, muskrat, bear, partridge, and other wild animals and game found in New York. Mount the pictures on a large sheet of manila or wrapping paper, give it a title, and hang it on the schoolroom wall.

Project 2.—To find out how the people of France, Germany, and Switzerland care for their forests, read Sec. 98. What good reasons can you give for our following their example? Write to the State Conservation Commission, Albany, and ask them to send you some of their bulletins about Lands and Forests. Some of them are illustrated, and all are interesting.

Project 3.—Look in your American history books for interesting facts about Marquette, La Salle, and Champlain. Tell your classmates what you find.

DIRECTIONS FOR FURTHER STUDY AND FOR REVIEW

You must now think of the Adirondacks as a group or dome of forested mountains, high in the center and sloping to the north,



Photo. H. W. Porch

Fig. S. 29. Picking grapes in Niagara County.
Why are the vines not allowed to grow tall?

south, east, and west. Melting snows and rains must, therefore, flow from the mountains in these four directions. The map shows what waters receive this drainage. Find two streams flowing into the St. Lawrence; one into Lake Champlain; one into Lake Ontario. What business do the people of the mountains engage in? those who live in the foothills?

2. THE LAKE PLAINS AND THE ST. LAWRENCE RIVER PLAIN

S. 27. Lake and river shores.—The lowlands to the north and west of the Adirondack Mountains belong to the valley of the St. Lawrence and to the plain of Lake Ontario. The plain continues west along the southern shores of both Lake Ontario and Lake Erie. Fruit raising is the chief industry of this western part, because the climate near the lakes is favorable. Pears, peaches, and apples are the leaders along Lake Ontario, and grapes along Lake Erie, especially in Chautauqua County. Many

vegetables, flowers, and seeds are also grown in this part of the state.

The plain along the eastern end of Lake Ontario and the upper St. Lawrence is too cool for fruit growing, and the soil is also less favorable. Consequently dairying has become the chief agricultural industry. (Sec. S. 32.) There are factories for making cheese and condensed milk, and creameries for making butter. Milk is even sent daily to New York City from this distant part of the state.

S. 28. Cities.—Potsdam, Ogdensburg, Watertown, and Carthage are business and manufacturing centers. Watertown is a leading cheese center, and in addition has developed its water power until it is known as "the Hydroelectric City". One product is paper and wood pulp; it makes farm tools also. Gouverneur is not a paper-making place. It has marble and talc quarries. (Sec. S. 37.) You have already studied about two of the Western Lake Plain cities, Buffalo and Rochester. (Secs. S. 15 and S. 16.) Two other important cities are Oswego and Dunkirk. Locate them on



Courtesy New York Central Lines

Fig. S. 30. Looking up the St. Lawrence River among the Thousand Islands.

the map. Find out what their inhabitants make and ship away, and how they are important as ports.

One of the famous parts of the St. Lawrence borders New York. Here the river is very wide, and scattered through it are the many islands that give this locality the name, The Thousand Islands. To the people of Canada and New York this is a favorite summer playground.

Little steamers and motor boats ply up and down the river, and rowing, fishing, and swimming are among the pleasant things to do. When you go, do not forget the daring French explorers and missionaries, Father Marquette, Joliet, and La Salle. With the friendly Algonquin Indians as guides and companions they pushed their canoes up the rapid waters of the St. Lawrence into the quiet lakes, and so reached the heart of the continent.



Courtesy International Paper Co.

Fig. S. 32. A paper mill at Corinth, Saratoga County. What reasons can you give for locating a paper mill here?

You must think of Lake Champlain as part of the St. Lawrence River system. (Sec. S. 25.) Why?

3. A SHORE ISLAND

S. 29. Long Island.—You must not overlook the fact that Long Island is a lowland also. On its western end is part of Greater New York City. Look on the map, Fig. S. 2, and see that the eastern boundary line of the great city lies east of Jamaica. The part of the city on Long Island covers more land than that on Manhattan Island and the Bronx. The eastern part of the city includes many small towns, between which are acres and acres of gardens and truck farms that supply the city with cut flowers, lettuce, radishes, peas, potatoes, spinach, strawberries, and all the spring and summer vegetables and small fruits that city people like to have on their tables. This garden truck can be picked in the late afternoon or early morning and loaded on motor trucks. In a few hours



Photo. Brown Bros., N. Y.

Fig. S. 31. A mid-week afternoon on Surf Avenue, Coney Island.

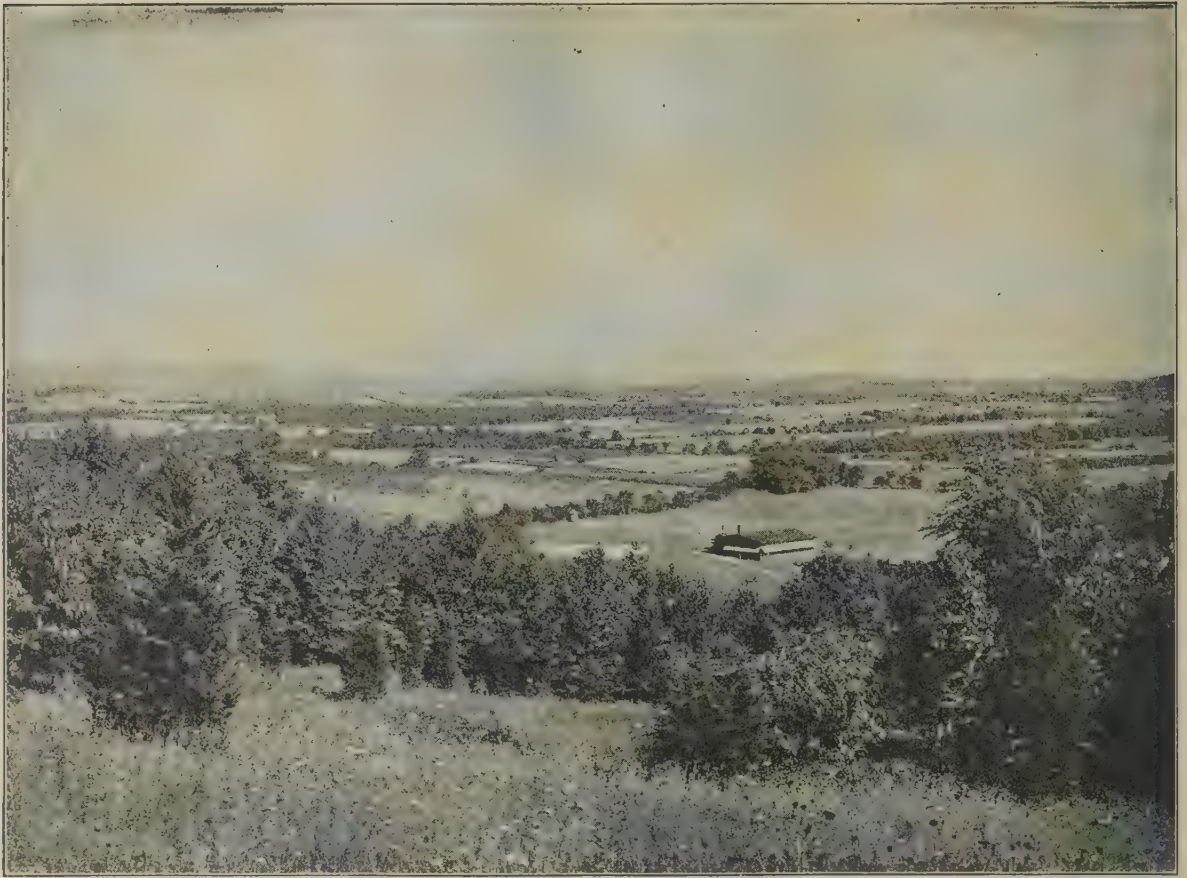


Photo. Wm. H. Rau, Inc.

Fig. S. 33. A typical scene in the Plateau Region along the southern edge of the Mohawk Valley. Try to picture this rolling country when the Indians roved across it. What has the white man done to make it a land of farms?

it is arranged temptingly in the markets and grocery stores side by side with lemons and oranges from Sicily or California, and pineapples from Florida and Hawaii. Many people doing business in New York have their homes in the crowded western part of the island, or in the small towns, as well as farther out along the shores or among the wooded hills of this big island, where they have been attracted by the quiet beauty and mild ocean air.

The central part of the island has not been fully developed. The traveler on one of the hard, nearly level inland roads sees little towns, small truck farms,

and good-sized patches of woodland. The North Shore and the South Shore have many summer resorts. Coney Island, Manhattan Beach, and Far Rockaway are all within easy reach of New Yorkers. (Fig. S. 2.) Scattered still farther east are private houses of wealthy people and small towns. (Fig. S. 2.) Oyster Bay, one of these small towns on the North Shore, is more famous as the home of Theodore Roosevelt than it is for the many oysters shipped from its harbor.

We must think of Long Island as an overflow region for the many people who cannot find homes on Manhattan, as a

great summer pleasure resort, and as a garden spot for growing vegetables and flowers. In Sec. 40 you will read of another interesting thing about Long Island.

DIRECTIONS FOR FURTHER STUDY

Make a list of the pleasure resorts you have so far studied about in New York State, and locate them all on the map, Fig. S. 2. Think about the Adirondack Mountains, the lowlands along the lakes and the St. Lawrence River, and Long Island, and decide how each of these places is useful to the rest of the state.

4. THE ALLEGHENY PLATEAU

S. 30. Its rolling hills and deep valleys.—South of the Mohawk Valley and the Lake Plains is another highland, the Allegheny Plateau. The color on the map, Fig. S. 2, tells you that the region is nearly all from 1000 to 2000 feet high. Along the valleys of the Susquehanna and Delaware rivers, and where the Finger Lakes push south, it is lower. In the Catskill Mountains on the eastern edge of the plateau, it is higher. This highland belongs to the Appalachian Highlands, which run from northern Alabama to northern Vermont parallel to the Atlantic Ocean. This plateau, however, is a region of farms and pastures, while in many parts of the mountains you can ride mile after mile and never see a human being. You look off into the distance and see ridge after ridge and peak after peak. You hear no sound except the wind in the trees and the rustle of the rabbit among the leaves.



Fig. S. 34. Pure bred Holstein-Friesian cattle on a farm in Herkimer County.

Photo. Brown Bros., N. Y.

Only the forest people—the deer, the partridge, and perhaps the bear—roam these silent places. On the New York Plateau the surface is smooth enough for fields. Therefore, except in the higher Catskills, the land is taken

up by farms and pastures and small towns. (Fig. S. 33.)

S. 31. The Plateau rivers.—The maps, Figs. S. 11 and S. 12, show you plainly just where the Plateau rivers rise—the Delaware in the Catskills, the Susquehanna in the central and eastern part of the Plateau, and branches of the Allegheny in the western part of the state. Where does the main branch of the Allegheny rise? (Fig. S. 2.) Where is the source of the Genesee? These rivers have cut deep valleys in the upland, so that the region is very rolling, with high hills that have beautiful views from their summits. Here is rich pasture land for dairy cows. Here, too, the soil yields excellent crops of corn, oats, rye, buckwheat, and forage crops for feeding live stock.

S. 32. Dairying.—The boys and girls who live in a dairy region know a good deal about the sending of milk to creameries and to the companies which supply milk to large cities. If you live in a town, perhaps your milk comes from some farm in this region. Can you imagine how many quarts of milk it takes to supply the six million people of New York City? Remember that some of this comes from as far away as the

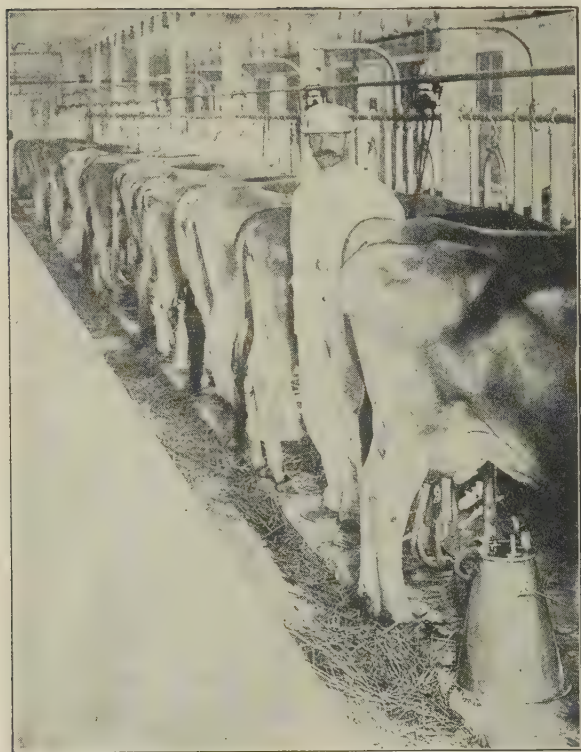


Fig. S. 35. In a model dairy barn. Notice the milking machine. These machines save the labor of many men.

northern part of the state. (See Sec. S. 27.) The greatest care must be taken to have the milk pure. For this reason, companies have "pasteurizing" plants where a large part of the milk is freed from disease germs by heating it to a high temperature. There are many boys and girls in New York City who have never seen a cow or a sheep! How interested city children would be in a big dairy barn at milking time (Fig. S. 35), especially if a milking machine was in operation! This plateau has long, cold winters, but even when the snow is several feet deep, cattle must be fed and milk carried to stations or creameries.

S. 33. Modern farms.—The Empire State does much to help the farmer produce good crops and stock. It organ-

izes Farm Bureaus all over the state, and gives the farmer instruction at the State College of Agriculture at Ithaca during the winter when farm work is lighter. The Farm Bureau agent is the friend of the farmer, and everyone on the farm looks forward to his regular visit. You have read (Sec. S. 26) how he teaches children forestry; besides this he shows the farmer how to grow better seed for next year's planting, how to keep his barns clean and sanitary, and his cattle free from sickness. He tests the milk to see if it comes up to the standard, and every farmer feels proud when his products pass a high test. This is one of the reasons why the dairy products of New York rank very high.

On almost every farm in New York you will find a scene like that in Fig. 77. Corn is raised in nearly all parts of the state because it is such an excellent food for live stock. The stalk is cut into small pieces and put into silos to be used for food for cattle during the winter. This picture cannot give you the beauty of the golden pumpkins heaped around the corn "wigwams", but perhaps you have seen the real thing for yourself. Why do many dairy farmers keep a dog? Perhaps you have seen a dog go after the cows and bring them safely into the barnyard.

Hay is one of the chief products of our state. What other stock besides cattle do farmers raise? Though New York produces millions of eggs on its poultry farms all over the state, these are not enough, and its large cities send to other states and even as far away as Denmark for eggs, butter, and cheese.

The raising of food products is the most important industry of this high-

land, but much manufacturing is done in the towns and cities. These are all located on the railroads, there being no navigable rivers in the section.

S. 34. Indian trails, railroads, cities.—We have seen how white men's canals and railroads followed the Indian trails in the Mohawk and Champlain valleys. (Sec. S. 10.) In the Plateau Region the railroads which cross the state—the Erie, the Lackawanna, and others—take the same paths over which the Indians walked in single file as they journeyed back and forth between the villages on the Delaware and Susquehanna and the "Long House" of the Iroquois. (Fig. S. 8.) Fig. 212 shows what a railroad center Binghamton is. There are big repair shops there as well as other industries. Near Binghamton are Endicott and Johnson City, both towns being made up of people connected with immense shoe factories. Elmira, Olean, Jamestown, and Salamanca are important manufacturing towns.

There is much beauty in the breezy uplands and picturesque gorges and lakes of the region. Chautauqua Lake and the summer city on its shores are well known all over the United States. Watkins Glen, a deep, narrow valley where running water has worn the rock into gorges and long galleries, is a famous place of interest. There are also the "Finger Lakes", long and narrow as their name suggests, with their Indian names and their rich fruit orchards and vineyards. On one is Ithaca, the home of Cornell University.

S. 35. The highest part of the Plateau is its eastern part, the Catskill Mountains. Because of the wooded glens, the waterfalls, and the mountain heights, this

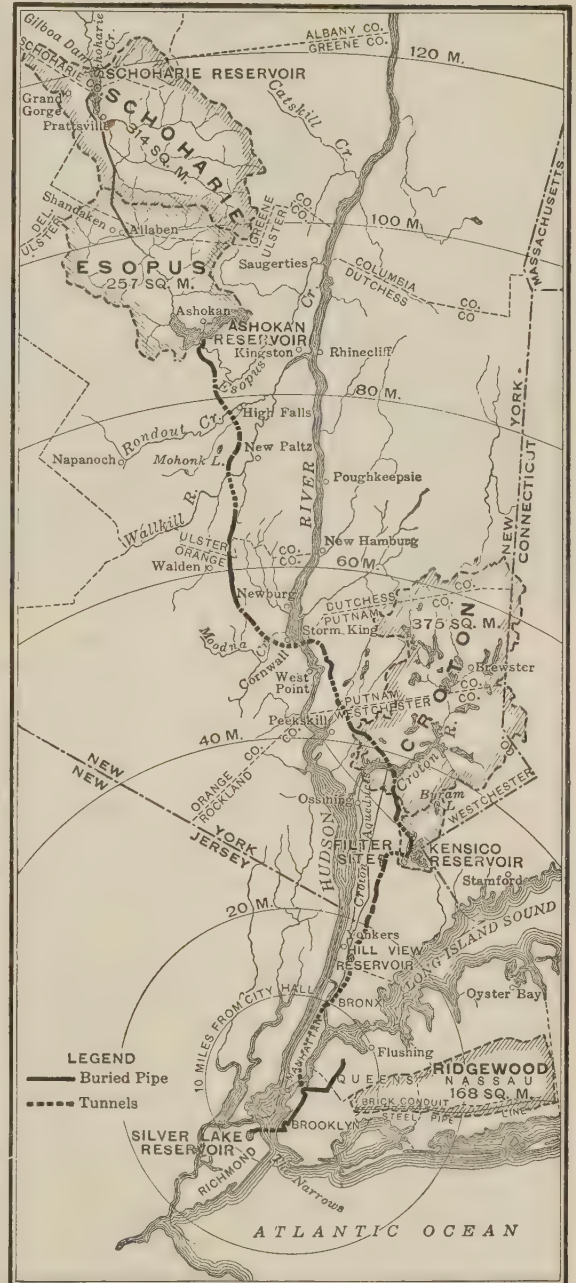
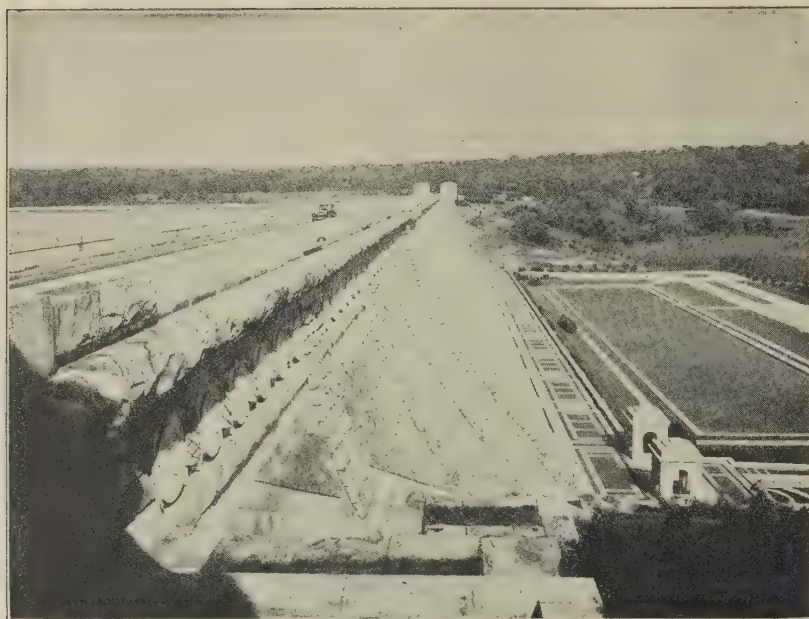


Fig. S. 36. Map of the Catskill water-supply system for New York City. Note as well the Croton and the Ridgewood water-supply systems.

beautiful region has long been a favorite summer resort of New York City people.

Now it is of even more importance, for nearly half the water supply of New



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Fig. S. 37. Kensico Dam, Ashokan Reservoir, Catskill water-supply system. (Fig. S. 36.) An automobile roadway is carried across the dam.

York City comes from there. The water is carried from large lakes or reservoirs in an enormous pipe called an aqueduct. This pipe skirts the hillsides, goes right through mountains, descends over a thousand feet to pass under the Hudson, comes out again, entering New York in a great tunnel, which goes under "The Narrows" to Staten Island. Think of this huge stream flowing in the dark under the city and rising into the tall buildings at the beck and call of everyone who turns a faucet! How long do you suppose it takes the water from the time it leaves the Catskills to reach Staten Island? Just three whole days! Think of the number of gallons a city of six million uses in a day—six hundred million gallons!

If you have ever drawn up a bucket of water from a well, you have some idea of the hard work it would be to get water if it were not for modern con-

veniences. The building of this water system was one of the biggest engineering jobs ever done in this country, much more difficult than that of digging the Panama Canal about which you hear so much. The pure and abundant water which New York has always had is one reason why the city is so healthful. What do you know about the water supply of your town? Where does the water come from? Have you ever seen a reservoir?

How does a dry time in summer affect the amount of water in a reservoir?

PROJECT

Using your pattern, draw an outline map of the state and place on it the chief products as nearly as possible in the places where they are found in large quantities. Mark also the place where you live.

DIRECTIONS FOR FURTHER STUDY AND FOR REVIEW

Which rivers of New York State flow east and south into the Atlantic? west and north into the St. Lawrence? west and south into the Ohio and Mississippi? Consult Reference Table V to see how many mountains as high as Mt. Marcy it would take to make one as high as Mt. Blanc. Where is Mt. Blanc? What two cities of New York are in the list of the Largest Cities of the World? (Reference Table VIII.) What cities are on the Allegheny? the Susquehanna? the Mohawk? the Hudson? Lake Erie?

Why did the people of the Empire State form a Conservation Commission? Name all the things the Commission is doing for our state. Which picture shows most clearly the good work the Commission is doing?

TWO IMPORTANT STATE INDUSTRIES

S. 36. The fishing industry of our state.—Take the map of New York and look at the big bodies of water on its borders. Now recall what you have learned about the numberless lakes and streams in the Adirondack Mountains, the Lake Plains, Long Island, and the Plateau. Are you not quite sure that in these waters, both fresh and salt, fishing must be an important industry? Name the salt waters; the fresh waters. In most of the rivers and lakes, trout or bass or pickerel can be caught. What commission sees that these waters are stocked with fish? (Sec. S. 26.) In the big rivers and lakes are larger fish. The people of western and northern New York think there is no fish so delicious as the whitefish of Lake Erie and Lake Ontario. One busy lawyer of Washington, D. C., spends his holiday every year fishing in Lake Ontario because he remembers how good the whitefish used to taste when he was a boy. The New York City dweller, however, thinks no fish can compare with the Hudson River shad. There are sea fish, such as the cod and the flounder, caught off the southern shore of Long Island, while along both shores oyster fishing is important.

S. 37. The mines and quarries.—A great variety of minerals is found in our state but only in small quantities. It has no coal, but that mineral is brought in from Pennsylvania by barge and by train, and distributed all over the state. Iron is found in some places, but since it

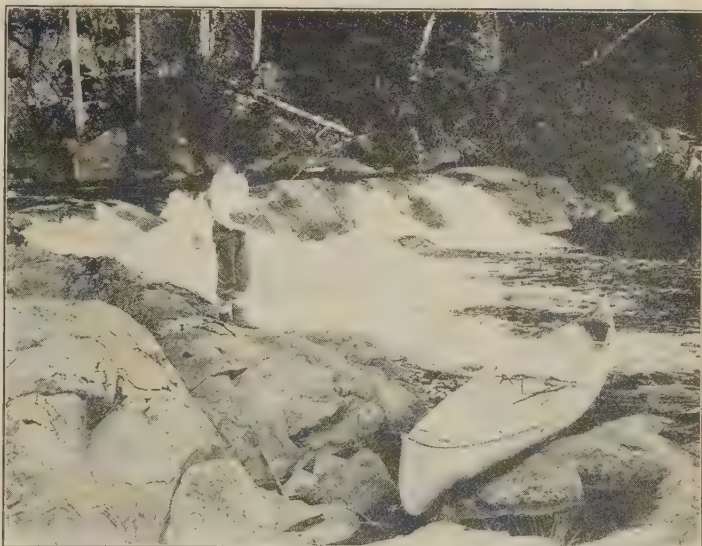


Photo. Brown Bros., N. Y.

Fig. S. 38. A boy fishing in an Adirondack stream.

can now be obtained more cheaply from Minnesota, New York does not mine much iron. You learned in Sec. S. 17 about the salt springs near Syracuse. Petroleum is a product of some of the southwestern counties, but the supply is rapidly being exhausted. Natural gas is still abundant, however, in these counties.

Though other states rank higher in minerals, New York has beautiful building stones. Marble and sandstone are quarried on the northern slopes of the Adirondacks; granite is found in the Adirondacks and in the Highlands of the Hudson; and slate for roofing, clay for bricks, and limestone for cement are abundant. We use limestone for buildings, for tombstones, and to make plaster for walls. Gypsum is a very useful rock of which New York has a great deal. We use it for plaster of Paris. With its help surgeons keep broken limbs in place. We use it also for stucco work and to make casts of sculpture. Where is graphite found? (Sec. S. 25.)

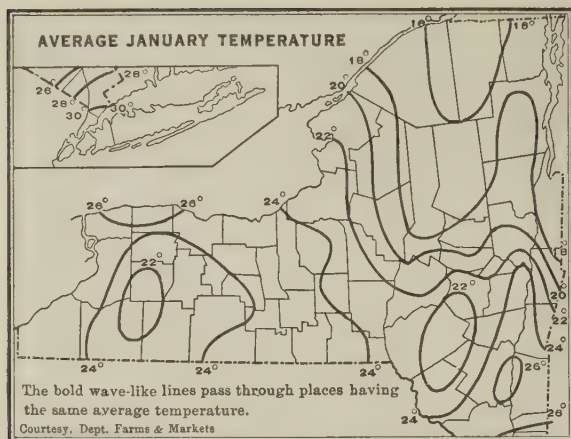


Fig. S. 39. This map and Fig. S. 40 show the average temperature over a period of years. Any particular day is likely to be warmer or cooler than the temperature shown on the map. What is the nearest temperature line to the place where you live?

CLIMATE

S. 38. A climate good for industry.—Our state has a remarkably healthful climate. In every part the winters are cold enough to make people feel energetic, and the summers are pleasantly warm with plenty of real hot weather for drying hay and ripening crops. Those who sometimes complain of long-continued heat in midsummer forget that such days are called by the farmer "good corn weather". "Good" means that his corn is growing tall and putting out tassels, and that the ears are filling out plump and round. There is considerable difference in temperature between the very southern part of the state and the extreme northern and western parts. Often when the city of Watertown has a

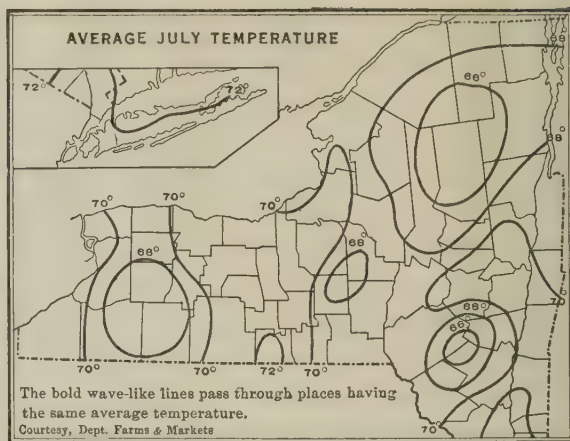


Fig. S. 41. Where is the warmest part of our state in summer? the coldest part in winter? The Great Lakes make the land near them warmer in winter and cooler in summer than it would be if the lakes were not there.

heavy fall of snow, it will rain in New York City and in the region around it. This is because the southern part of the state is nearer the ocean, which in winter is warmer than the land.

Everywhere in the state there is sufficient rain, more falling in the southeastern part near the ocean. The map, Fig. S. 40, shows the rainfall in different parts of the state. Find the rainfall region in which you live. How much rain do you have in a year? In which season does

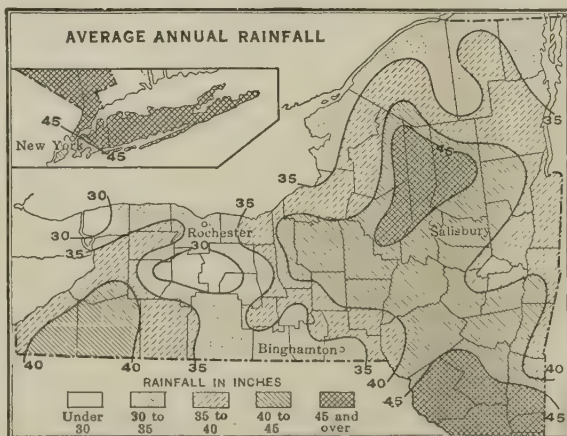


Fig. S. 40. New York, because it is so near the ocean from which the rain-bearing winds must come, receives plenty of rain to water the farmers' crops, and to grow rich grass for cattle.

most of it fall? Which part of the state has the least rainfall? How much snow do you have usually? Which part has the most snow?

PROJECTS

Project 1.—Make as full a list as you can of the fruits and vegetables in a market in your home town. Arrange them in two groups. In one, place those that grow in

your neighborhood; in the other, those that do not grow there.

Project 2.—On a blank map of the United States write the names of the fruits and vegetables of Project 1 in the states where they grow. You can make the map very attractive by coloring the state appropriately for the product—yellow for lemons, green for olives, and so forth.

Project 3.—Collect specimens of the rocks of your neighborhood. Try to find their names. Read p. 160 to find out about granite and sandstone. Get a specimen of each. How is each one used where you live?

Project 4.—To find what wind brings you fine weather or rainy, cold weather or hot, watch the vane or flag on your school building, and report to your class what you observe. Find a state in Fig. 88 with more rain than you have; with less. Do these states both grow the same crops New York State grows?

DIRECTIONS FOR FURTHER STUDY

Read pages 11, 12, 13, and 154 to learn about deep sea fish and how they are salted and smoked for winter use. Read pages 132 and 133 for information about how oysters are grown and caught.

NEW YORK CITY

S. 39. The greatest manufacturing city in the United States.—You began the study of the Empire State by asking why it was that over ten million people should come to live in it. You might ask yourself a like question about New York City. What is it that draws over five million people to this one place to live? The answers have been told you on pages S. 4, S. 5, S. 6, and S. 7.



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Fig. S. 42. New York City Hall, with Municipal Building in the background, and World Building to the right. Whose office is in the City Hall? Look in your dictionary for the use of the word *municipal*. You can tell from its height which building is the newest.

Review these sections, then arrange the answers in your mind in some such fashion as this:

I. The large, deep harbor draws ships from all over the world for trade.

II. New York City lies at the mouth of the Mohawk-Hudson water route. New York is the only state which has a water route across it connecting the Atlantic with the Great Lakes.

III. Canal boats and railroads bring the products of the Central States to the ocean gateway, carrying back imported and manufactured goods.

IV. Because of excellent land and water transportation New York City can get all kinds of materials to manufacture, workers to make the products, building materials for factories, and fuel with which to run the machines. New York City has, therefore, grown into the largest manufacturing city in the United States.



Photo. Brown Bros., N. Y.

Fig. S. 43. Times Square, New York City, with the crowd watching the baseball score board. How will these people reach their homes?

New York makes more clothing and prints more books and magazines than any other of our cities; in fact, there is hardly anything you can name—from artificial flowers and jewelry, to sugar, molasses, and gasoline—that is not made in New York or in its neighborhood. When you think of this huge city spreading across islands, bays, and arms of the sea (Fig. S. 5), with its millions of workers and all the wealth their labor produces, remember that Manhattan Island was bought from the Indians for twenty-four dollars. As many billions would not pay for it now.

S. 40. The geography of New York causes many difficulties in transportation. —Everywhere in New York one sees crowds of people. At the street crossings

long lines of automobiles, trucks, trolley cars, and omnibusses are waiting for the signal of the traffic policeman (Fig. S. 44) to go forward. Morning and night, cars and busses on the surface, elevated trains above ground, and subways below ground are packed with people. One is fortunate to get a seat in these rush hours. More and more people come to New York to live or to do business every year, and it seems as if there never would be cars and trains enough to carry them all comfortably.

The geography of New York has much to do with this condition. Look at the map of New York City (Fig. S. 5) and notice that the arms of the sea which give the city its magnificent water front divide the city up into separate parts. Manhattan Island is the chief business and trade center of the city, and a great



Photo. Brown Bros., N. Y.

Fig. S. 44. Notice the crowds crossing Fifth Avenue at Forty-second Street, while traffic north and south is halted by the policeman in the signal tower.

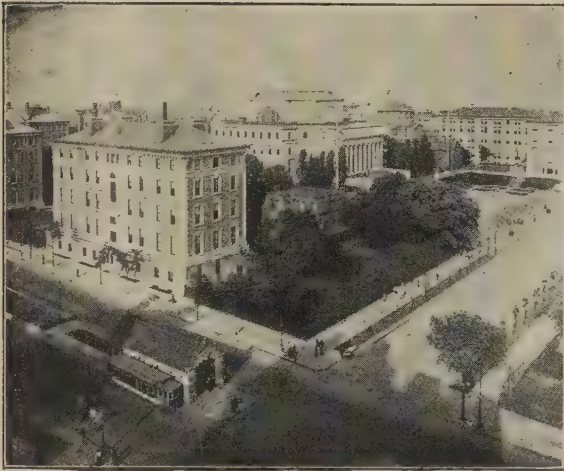


Photo. Brown Bros., N. Y.

Fig. S. 45. Some of the buildings of Columbia University, New York City. The central, domed building is the library. In the foreground is the subway station.

deal of manufacturing is done there. This means that a large part of the population has to go to the downtown part of the city and back every day. Every day twice as many people have to be transported in New York City as are carried by all the steam railroads in the United States. Because the island is long and narrow, the crowds who live in the upper part of the city must go and come in the same direction. People in New Jersey who do business in New York are not content to cross the Hudson by ferryboat, as there are so many people now that the boats cannot run fast enough to carry them all.

Tunnels called "tubes" have been built under the Hudson, and long trains now carry passengers in greater numbers and more quickly. A bridge over the river is being planned, and a tunnel under the river for trucks and other vehicles. Many bridges have been built across the East River (Figs. S. 2 and S. 52) to connect Brooklyn and other Long Island towns with Manhattan Island. There



Photo. Brown Bros., N. Y.

Fig. S. 46. A scene in Central Park, New York City. What is the boy probably saying to himself as he watches the rowboats on the lake? Who can give the most interesting answer?

are tunnels under the East River; and the people of Staten Island are now asking for a tunnel under "The Narrows", to help handle the crowds. Perhaps we shall have to use airplanes next!

S. 41. Tall, crowded buildings.—If you look at the pictures of lower Manhattan (Figs. S. 42 and S. 52), you will see how the office buildings and warehouses have had to tower into the air in order to find a place on the island. It is well that firm foundations on which to anchor these buildings are to be had. To blast away the rock for the deep cellars which are necessary for the huge apartment houses that crowd the upper portion of the city, sometimes costs as much and takes as long as to build the whole structure. These rocky heights which make the surface of upper New York so uneven add very much to the picturesqueness of the city. On the rocky plateau of Morningside Heights a great cathedral is being built, and near by are the halls and library of Columbia University (Fig.



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Fig. S. 47. A view of the main building of the immigrant station on Ellis Island, and of the ferry boat which carries immigrants to the Battery, at the lower end of Manhattan.

S. 45), and not far away is the Hall of Fame in New York University.

S. 42. Parks.—To boys and girls there are some disadvantages in living in the largest city in the United States. One is that it is hard to find a safe place to play. There are few vacant lots for a game of ball or other sport. Some streets on which schools are located are closed to traffic during certain hours (Fig. S. 51), but there are not nearly enough of these for all the children. On Sundays and holidays fathers and mothers with their children take the subway to Bronx Park to visit the Zoölogical Gardens, or to Prospect Park, Brooklyn (Fig. S. 48), where there are boating, ball, tennis, and golf. These are long distances to travel, however, and trains are so crowded that many people have to stand on the home journey when they are tired from the day's outing.

S. 43. Great schools.—But there are many institutions to interest and educate

a boy or girl in New York. All the best things the world has to offer can be found there. The Museum of Natural History has many vast rooms full of exhibits showing the life of peoples and animals all over the world. (Fig. S. 49.) The best musicians come to New York and play to crowded halls; at the Metropolitan Museum of Art are some of the most famous pictures and statues in the world. Famous men and women visit this city of the New

World to see things they can find nowhere else.

In New York are schools of every kind, universities and colleges, music and art schools, trade schools, and schools for the blind and deaf, besides the public schools to which the majority of the



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Fig. S. 48. The Japanese Garden in the Brooklyn Botanical Gardens.



Courtesy American Museum of Natural History

Fig. S. 49. An interior view of the Museum of Natural History, New York City. See if you can name each animal shown. Find the whale. In other halls are to be seen birds, great animals of the past, Indian canoes, Eskimo kayaks, and hundreds of other interesting things.



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Fig. S. 51. On hot days in the tenement district of New York City, many times the fire hose is brought out, attached to the fire plug, and the water turned on. Then the children play in the cool spray from the hose. They have no "swimming hole", as do most country boys.

boys and girls go. Paris fashions come to New York direct, and as there is not a merchant from Florida to Washington but likes to have New York styles to offer his customers, so not a day in the year passes that does not find a buyer from some state in the Union at a New York hotel. There are over one hundred thousand visitors in the city every day. These alone would make a good-sized city. (Reference Table IX.) You

do not wonder that there are many hotels and that they are always full.

S. 44. A city of many nations.—New York is the port where most of the immigrants coming to America land. On Ellis Island in the Upper Bay (Fig. S. 47) they are detained until our government is sure they are able to support themselves. Each must know a little English. The fame of America as the land of opportunity has spread so wide that there are over fifty nations represented in the population of the city. Russia sends the most; then Italy, Ireland, Germany, Poland, Austria, England, Scotland, and Wales; next Hungary, Rumania, Sweden, Czechoslovakia, Norway, France, Greece, and Canada. Turn to the map of Europe (Fig. 315) and point out each of these European countries. Perhaps your father or grandfather came from a European country. How to make good Americans of these foreign peoples is the task before us. Our public schools are helping. As fast as the children learn English, they are



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Fig. S. 50. Pennsylvania Railroad Station, New York City. Try to find a picture of a Greek temple. Compare it with this picture. What features of the two are alike?

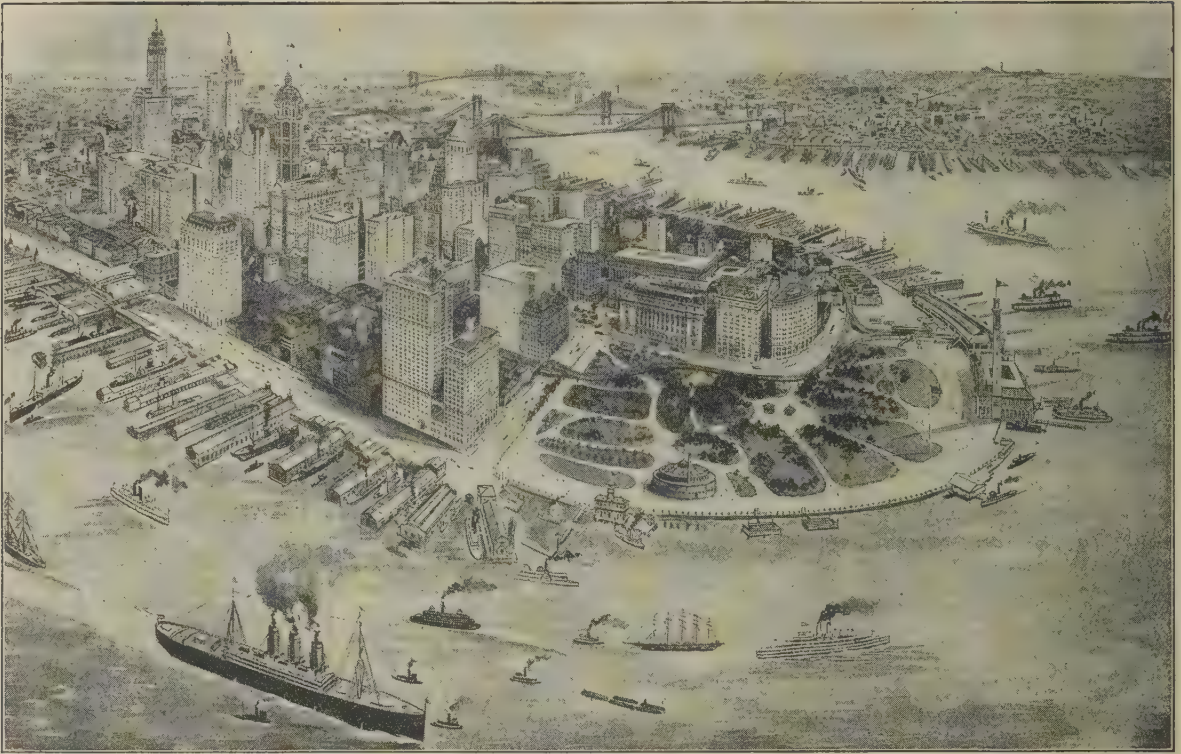


Photo. Brown Bros., N. Y.

Fig. S. 52. Looking across the lower end of Manhattan Island toward Brooklyn. See the tall buildings. The one at the extreme left is the Woolworth Building, the tallest of them all, 792 feet high. The next one to the right is the Municipal Building (Fig. S. 42). Only three of the five bridges across the East River can be seen. How many kinds of boats can you name? The tip of the island is known as Battery Park.

teaching it to their parents. That is a good way for both parents and children, since the young teachers as well as the older pupils take great pride in showing their skill.

S. 45. New York a safe and healthful place.—It is no small task to keep so great a city running smoothly and to make it a safe place. One person cannot do it all. The Mayor is the head of the city, but he has many helpers. The city is divided into boroughs or districts (Fig. S. 2), each borough having a president who looks after his own particular family, as it were. Manhattan Island is the chief business borough. There are also the boroughs of Brooklyn and Queens on Long Island, the borough

of Richmond composed of Staten Island, and the borough of the Bronx, the only one on the mainland.

Besides this there are departments, each of which has its head. The Street Cleaning Department collects ashes, rubbish, and garbage. It employs an army of men and thousands of carts to do this work. The police patrol the streets day and night. They look out for school children to see that they do not get run over (Fig. S. 44). They control traffic on all busy avenues and streets, making drivers obey the rules, and keeping the crowds from crossing the streets until the signal is given. The Fire Department also safeguards the city. Within a few seconds after a signal has

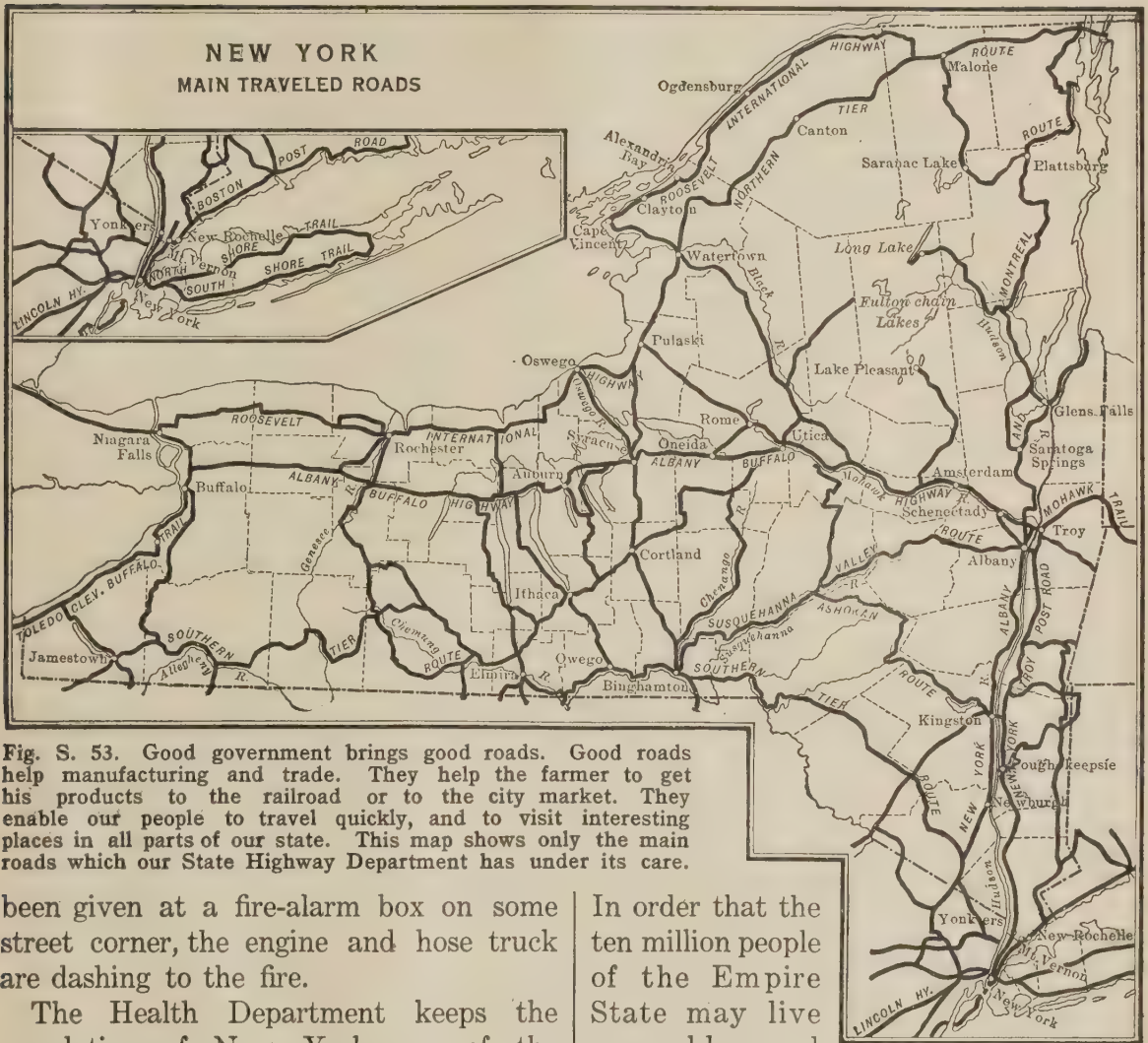


Fig. S. 53. Good government brings good roads. Good roads help manufacturing and trade. They help the farmer to get his products to the railroad or to the city market. They enable our people to travel quickly, and to visit interesting places in all parts of our state. This map shows only the main roads which our State Highway Department has under its care.

been given at a fire-alarm box on some street corner, the engine and hose truck are dashing to the fire.

The Health Department keeps the population of New York one of the healthiest in the world. This department inspects the milk, tests the water supply, sees that markets are free from dirt, and gives rules for people to follow to prevent sickness.

There are also the departments of docks, parks, and ferries; and over all is the Controller, who guards the city purse to see that no money is spent unlawfully.

THE GOVERNMENT OF OUR STATE

S. 46. Why we have a government.—

In order that the ten million people of the Empire State may live peaceably and happily in a group called a state, the common interests of all must be guarded. There must be rules that all should obey. Motor cars, for instance, must not drive too fast on public highways. Boys and girls must go to school, and rules of public health must be observed. Some one must see that the laws are obeyed; and as cities grow larger and new inventions are adopted, new laws have to be made. So, to make the rules and enforce them, we have government. The

Governor is the head of the state, but he, like the Mayor, has to have many officers to help him: a Lieutenant Governor, a Treasurer, and heads of departments, such as Health, Highways, Education, Charity, Prisons, and Conservation of Resources. All these departments are carried on for the public good. The legislature makes the laws. The state is like a big family. It is only the man who breaks the law that brings trouble. A good citizen of a city or country is one who obeys the laws.

PROJECTS

Project 1.—To get some idea of how New York City is fed.

What would be the chief foods that would come into the city every day in the year? in summer? Which things come from a distance? from within the state? Is anything sent from your home locality? Examine Figs. 215, 217, and 221 for some of the ways by which food is brought to the city.

Project 2.—Plan a trip from your home to New York City.

Tell the route you would take by rail or boat or by both. Plan what you would like to do and see while you are in the city. Before deciding this, examine all the pictures of New York City in this book.

Project 3.—Find out all you can about the great American whose home was at Oyster Bay, Long Island.

Project 4.—To learn the locations of the four largest cities of the world.

Look in Reference Table VIII for the list of the largest cities of the world. Name the first four. In which country is each? Which two are near the ocean? Which are on rivers? Give one good reason why large cities grow up on rivers.

Project 5.—Make a study of your home town to find out (1) why people have come there to live and for what the town is important; (2) what the citizens of the place have done to make it a pleasant and safe place for you to live in.

This project is a big undertaking, but you will find it worth while if you put energy and interest into it. One-half your class might take the first problem, the other half the second. Each group can then tell the other what it has learned.

(1) In order to answer the first problem you will need to study the location of the place. Is it on a river or a lake? near rapids or falls in the river, or on a good harbor on the lake? Are there mineral products near? quarries? healthful springs? Is the country about it good for farming? Are the farm products brought there to be sold? Is it where two or more roads cross?

Then you must find out all you can about the industries of the place. Use your eyes and ears and ask questions at home and of your friends. The Appendix, Table S. 3, will help you, but there are many busy towns which could not be listed because of lack of space. Owners of factories are generally ready to help school children find out about home industries. See who can make the longest list of home industries.

(2) To answer the second problem you might work on questions like these and others you think of: How is your town or city laid out? Is there a business section and a section where people live? Are the streets broad or narrow, clean or littered? How did some of them get their names? Are there parks and shade trees? Are the school buildings clean and attractive? the playgrounds neatly kept? Is there a public fountain or are there statues to famous persons? Who erected these? Is there a Public Library, a museum, or an art gallery, and if so, where did the money come from to build it? What do you think the town needs most to make it a better place to live in? What more could school children do to bring this about?

GENERAL REVIEW QUESTIONS

Compare the location of New York City with that of Philadelphia and Baltimore (Fig. 198). Find one advantage that New York has over each of the others. Compare the Hudson, Delaware, and Susquehanna rivers as to: (1) location; (2) kind of country they flow through; (3) body of water into which they flow; (4) cities. Why is the Hudson the most important of the three? Compare the location of Buffalo and Albany. Why has Buffalo a larger trade? Name the important islands in the bodies of water around New York City. Name and locate the five New York City boroughs. Look in your history books and see if you can find any pictures of the men or events mentioned in the Historical Facts in the Appendix, p. S. 41.

APPENDIX

TABLE S. 1.—INTERESTING FACTS ABOUT
NEW YORK

HISTORICAL

- 1524—Verrazano, an Italian navigator in the French service, was the first European to enter New York harbor. Statue in Battery Park.
- 1609—Henry Hudson, an Englishman in the Dutch service, went up the Hudson as far as the site of Albany.
- 1614—The Dutch made a settlement on Manhattan Island.
- 1626—Manhattan Island purchased by Peter Minuit from the Indians for twenty-four dollars' worth of beads and trinkets.
- 1664—English took possession of Dutch colony and named it New York in honor of the Duke of York (later King James II).
- 1754—A great Colonial Congress held at Albany.
- 1789—Washington inaugurated first President of the United States in Federal Hall, Wall Street, New York City.
- 1807—Robert Fulton steamed up the Hudson in the *Clermont*.
- 1825—Erie Canal opened.
- 1876—The French people presented the Statue of Liberty to the people of the United States.

OF GENERAL INTEREST

Manhattan Island is only $2\frac{1}{2}$ miles wide at its widest part, by $15\frac{1}{2}$ miles long. Midway the length, one can easily walk from one side of the city to the other in less than an hour.

The tip end of Manhattan Island is called "The Battery" because of the Dutch fort which once stood there. It is now a public park, and is a cool and pleasant place in summer to sit and watch the harbor.

Bowling Green is a small circular park at the southern end of Broadway. It is all that is left visibly of the early Dutch days.

Broadway is one of the longest streets in the world. It begins at Bowling Green and runs to the city line at Yonkers, a little over 14 miles.

St. Paul's Chapel on lower Broadway is the oldest church building in the city. George Washington's pew is there.

In Trinity Churchyard are buried Alexander Hamilton and Robert Fulton.

From Grant's Tomb on Riverside Drive one obtains a beautiful view of the Hudson and the Palisades.

A statue of Washington is at the Sub-Treasury Building on Wall Street.

A Water Gate at the foot of West 110th Street shows where Henry Hudson landed.

A statue of Nathan Hale is in City Hall Park.

Coney Island is a popular seaside resort.

The Natural History Museum is open every day free to the public.

The Aquarium at Battery Park has fish from all parts of the world.

Near the present site of Buffalo, La Salle built the first ship navigated on the Great Lakes in 1679. It was a little vessel of only 60 tons, and was called the *Griffin*. How many tons is the Leviathan?

In Schenectady is an Indian monument marking the spot where the Great Massacre took place.

TABLE S. 2.—RAILROADS OF NEW YORK
CITY

The following railroads have their terminals in what is called the Metropolitan District: Baltimore and Ohio R. R. (B. & O.); Central Railroad of New Jersey (C. R. R. of N. J.); Delaware, Lackawanna, and Western R. R. (D., L. & W.); Erie R. R.; Lehigh Valley R. R. (L. V.); Long Island R. R.; New York Central R. R. (N. Y. C.); New York, Ontario, and Western R. R. (N. Y., O. & W.); Pennsylvania R. R. (P. R. R.); New York, New Haven, and Hartford R. R. (N. Y., N. H. & H.).

You will find most of these roads on the railroad map (Fig. 212). Which road passes nearest your home? Have you seen cars marked with the initials of any of these roads?

Every day twice as many people have to be transported in New York City as are carried by all the steam railroads in the United States.

TABLE S. 3.—SOME OF THE IMPORTANT CITIES OF NEW YORK, THEIR POPULATION IN 1920, AND THEIR INDUSTRIES

Albany (113,344).—Printing and publishing, bakery products, paper goods, toys.

Amsterdam (33,524).—Knit goods, brooms, carpets, gloves and mittens, sweaters, hammers, typewriters, firearms, brass and copper goods.

Auburn (36,192).—Agricultural implements, carpets, shoes, woolen goods, rope, twine.

Batavia (13,541).—Plows, threshers, rubber goods, shoes, cut glass, paper boxes, flour, canned goods.

Beacon (10,996).—Wool and straw hats, rubber goods, tools, bricks.

Binghamton (66,800).—Tobacco, foundry and machine shop products, silk goods, furniture, men's clothing.

Buffalo (506,775).—Flour and gristmill products, slaughtering, foundry and machine shop products, iron and steel, food preparations, soap, automobile bodies, rubber tires, engines, leather, furniture.

Cohoes (22,987).—Cotton cloth, underwear, textiles, paper.

Corning (15,820).—Cut glass, railway supplies, brick, lumber, terra cotta goods, drills.

Cortland (13,294).—Foundry and machine-shop goods, wire, stoves, cash registers, bricks, wall paper, steel goods.

Dunkirk (19,336).—Locomotives, axes, gas engines, lumber, cotton goods.

Elmira (45,393).—Railroad cars, steel bridge-work, boots and shoes, auto parts, bicycles, glass, doors and sashes, tobacco, knit goods.

Fulton (13,043).—Paper, wool goods, flour, firearms, condensed milk, canned goods, macaroni.

Geneva (14,648).—Stoves, boilers, optical goods, motor boats, cutlery, glass, cereals, canned goods.

Glens Falls (16,638).—Paper, pulp, cement, cuffs, collars, shirts, flour, laths, candy.

Gloversville (22,075).—Gloves, mittens, leather goods.

Hornell (15,025).—Sashes, doors, blinds, railway supplies, furniture, leather and silk goods, bricks, electrical machinery, tiles.

Hudson (11,745).—Foundry and machine-shop products, knit goods, creamery products.

Ithaca (17,004).—Flour, furniture, firearms, salt, machinery and tools, paper, cigars, airplanes, moving-picture films.

Jamestown (38,917).—Furniture, worsted goods, cotton yarns, photograph paper.

Johnstown (10,908).—Gloves, mittens, knit goods, leather, lumber, gristmill products, machine-shop products.

Kingston (26,688).—Bricks, cement, boats, cigars, hardware, machinery.

Lackawanna (17,918).—Coke, pig iron, coal, iron and steel manufactures.

Little Falls (13,029).—Knit goods, hammers, felt, stoves, paper, milk machinery, dairy products.

Lockport (21,308).—Pulp, paper, machinery, cotton batting, wagons, cotton and woolen goods, creamery products.

Middletown (18,420).—Hats, shirts, auto tires, glass, printers' supplies, leather, condensed milk, cigars.

Mount Vernon (42,726).—Market garden products, light, power, heat.

Newburgh (30,366).—Machine-shop products, plaster, cotton and woolen goods, felt hats, paper, soap, perfumes, furniture, carpets, flour, bricks.

New Rochelle (36,213).—Residential city.

New York City (5,620,048).—Printing and publishing, men's clothing, foundry and machine shop products, women's clothing, tobacco, bakery products, slaughtering, copper, tin, and sheet iron, musical instruments, paint and varnish, millinery and lace goods, patent medicines, jewelry, furniture, sugar refining, ships.

Niagara Falls (50,760).—Chemicals, electrical machinery, paper and wood pulp, foundry and machine-shop products.

North Tonawanda (15,482).—Lumber products, pumps, merry-go-rounds, gas motors, organs.

Ogdensburg (14,609).—Silk goods, flour, gloves, skirts, leather and brass goods, lumber products.

Olean (20,506).—Lumber, tanned leather, refined oil, glass, machine-shop products, bricks, flour.

Oneida (10,541).—Chairs, pushcarts, knit goods, steel goods, canned goods, milk machinery.

Oneonta (11,582).—Cigars, knit goods, flour, shirts, silk goods, overalls.

Oswego (23,626).—Starch, knit goods, boilers, wool and paper mills, rope and twine, flour, plants and seeds, lumber.

Plattsburg (10,909).—Lumber products, sewing machines, typewriters, autos, foundry and machine-shop products, pulp, flour.

Port Jervis (10,171).—Gloves, silver-plate goods, neckties, overalls, skirts.

Poughkeepsie (35,000).—Underwear, trousers, cigars, canned fruit and preserves, knit goods, children's dresses, buttons, dyes.

Rensselaer (10,823).—Chemicals, felt, shirts. Large railroad shops.

Rochester (295,750).—Men's clothing, boots and shoes, foundry products, electrical machinery, optical goods, furniture, flour and gristmill products, cameras and photographic supplies.

Rome (26,341).—Brass and copper goods, locomotives, knit goods, bricks, canned goods, automobiles, creamery products.

Saratoga Springs (13,181).—Mineral water.

Schenectady (88,723).—Bakery products, lumber products, electrical machinery, locomotives, newspapers and periodicals.

Syracuse (171,717).—Auto bodies, men's clothing, confectionery and ice cream, furniture, lumber products, printing and publishing, tobacco and cigars.

Tonawanda (10,068).—Steel, lumber products, paper boards.

Troy (72,013).—Collars and cuffs, foundry products, brushes, women's clothing.

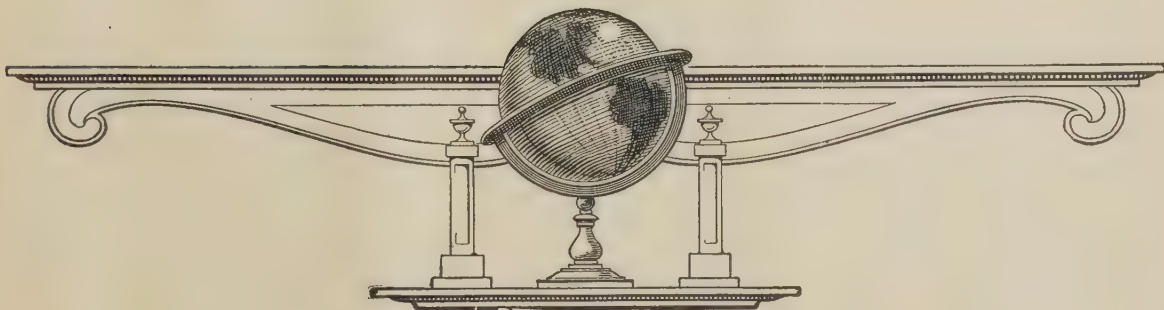
Utica (94,156).—Knit goods, cotton goods, men's clothing, bakery products.

Watertown (31,285).—Paper, air brake supplies, pulp, plumbers' supplies, flour, gloves, knit goods, machine-shop products.

Watervliet (16,073).—Shirt waists, collars, bells, iron and lumber products, street cars, boats.

White Plains (21,031).—Residential city.

Yonkers (100,176).—Sugar refining, carpets, iron and steel goods, druggists' preparations.



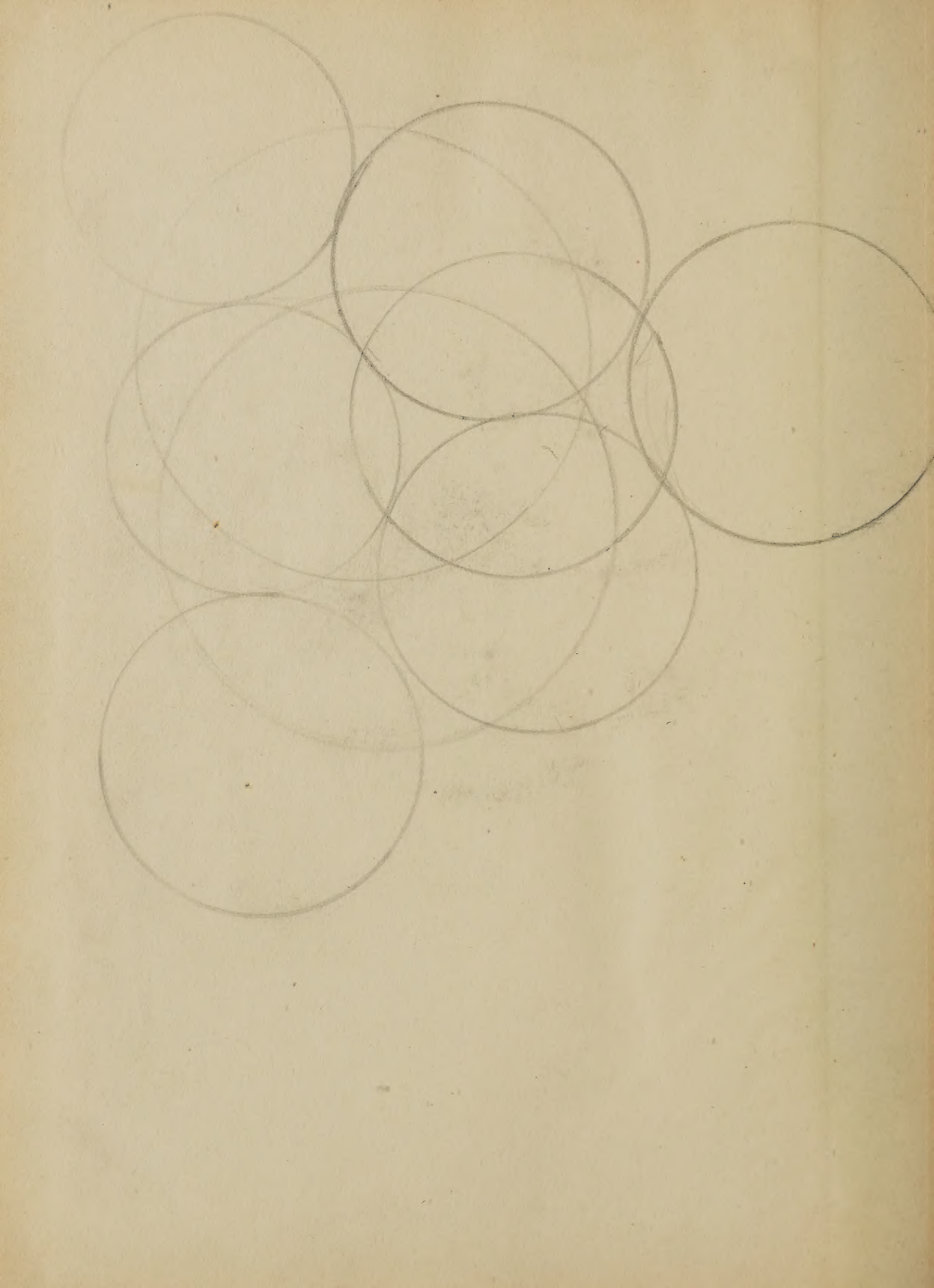
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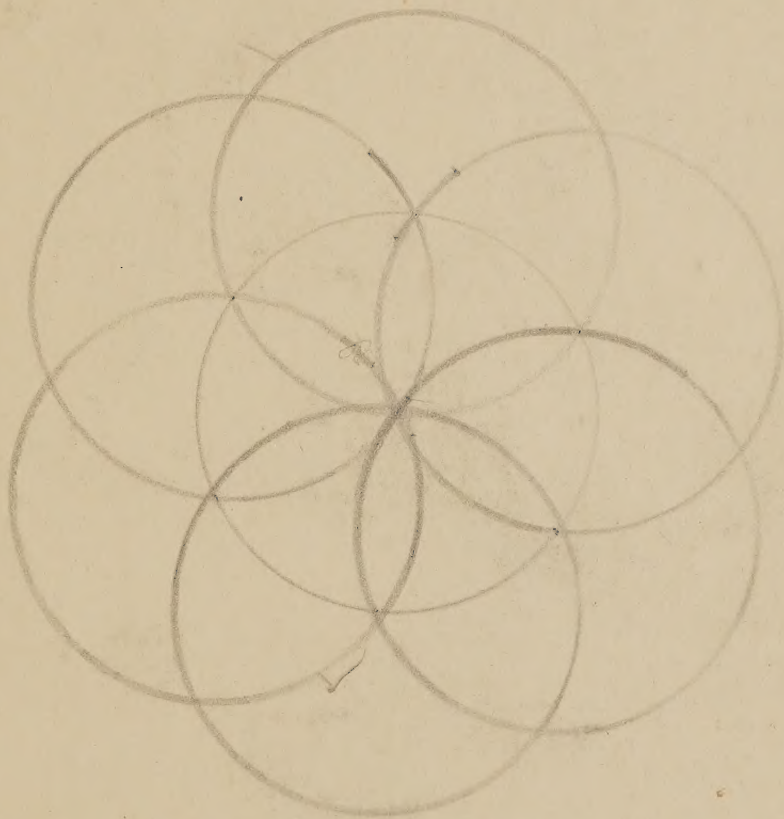
Explanation of Symbols: Geographic and proper names are indexed in black-face type, (**Adirondacks**), other subjects in light-face, (*apples*). Map references are given by italic figures in parentheses, with or without location, as (3 F2) or (6). County seats, mentioned in the text, are shown thus, ***Albany**. The more important discussions of subjects are indicated by black-face figures, as 19. Other references are in light-face figures, as 9. Illustrations are shown by italic figures with asterisk, as *22. All references are to page numbers in the **New York Supplement to Human Geography, Book I**.

Key to Pronunciation: âte, senâte, râre, căt, locâl, făr, âsk, pârade; scêne, èvent, êdge, novêl, refêr; right, sîn; cöld, ôbey, cörd, stôp, cômpare; ûnit, ûnite, bûrn, cût, focûs, menû; bôôt, fôôt; found; boil; function; chase; good; joy; then, thick; hw = wh as in when; zh = z as in azure; kh = ch as in loch.

- Adirondack** (ăd'î-rôn'dăk) **Mountains**, (3 F2), 9, 19.
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PATENTED SEPT. 22, 1925

